Control and Prevention of Malaria Project (CAP-Malaria)

Burma

Annual Progress Report

(October 1, 2014 to September 30, 2015)

Prepared by CAP-Malaria Team

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ACRONYMS

ACT	Artemisinin-based Combination Therapy
AMRP	Artemisinin Monotherapy Replacement Project
AOP	Annual Operation Plan
ARM	Artemisinin Resistant Malaria
ARC	American Refugee Committee
BCC	Behavior Change Communications
BHS	Basic Health Staff
CAP-Malaria	Control and Prevention of Malaria Project
CBO	Community-Based Organizations
CDA	Community Development Action
CPD-Burma	Country Program Director-Burma
COP	Chief-of-Party
CPI	Community Partner International
DCOP	Deputy Chief-of-Party
DOT	Directly Observed Treatment
DMR	Department of Medical Research in Lower Myanmar
EDAT	Early diagnosis and appropriate treatment
FDA	Food and Drug Administration
GFATM	Global Fund to Fight AIDS Tuberculosis and Malaria
GMS	Greater Mekong Sub-region
GP	General Practitioner
HF	Health Facility
HH	Household
HMIS	Health Management Information Systems
IEC	Information, education, communication
IRC	International Rescue Committee
KBC	Karen Baptist Convention
LLIN	Long-lasting Insecticide Treated Net
MNMA	Myanmar Nurses and Midwives Association
MMA	Myanmar Medical Association
MMP	Mekong Malaria Program
MMP	Mobile and Migrant Population
MMW	Mobile Malaria Workers
MOU	Memorandum of Understanding
NMCP	National Malaria Control Program
NSP	National Strategic Plan
NMTG	National Malaria Treatment Guideline
Pf	*Plasmodium falciparum*
Pv	*Plasmodium vivax*
QA	Quality Assurance
QC	Quality Control
RAI	Regional Artemisinin Initiative
RDTs	Rapid Diagnostic Tests
SCI	Save the Children International
SOP	Strategic Operational Plan
TES	Therapeutic Efficacy Surveillance
Tier 1	Area with confirmed artemisinin resistant malaria
Tier 2	Area with probably artemisinin resistant malaria
TMO	Township Medical Office
URC	University Research Co., LLC
USAID	United States Agency for International Development
USP	United States Pharmacopeia

VBDC	Vector Borne Disease Center (Thailand, district level)
VMWs	Village Malaria Workers
WHO	World Health Organization

EXECUTIVE SUMMARY

The USAID | Control and Prevention of Malaria (CAP-Malaria) is a region-wide project that strives for systematic prevention and control of malaria and artemisinin resistant malaria (ARM) in affected regions of Thailand, Cambodia, and Burma, aiming to prevent the spread of artemisinin resistant *P. falciparum* malaria in the Greater Mekong Sub-region (GMS). In Burma, CAP-Malaria is implemented by University Research Co., LLC (URC) and Save the Children.

In Year 4, CAP-Malaria continues to strengthen the quality of service delivery in existing project areas, while expanding coverage in new expansion areas (3 townships from Bago and 3 township form Kayah) where there are gaps in malaria prevention and case management services (test and treat) by working at the community level through village malaria workers (VMWs), mobile outreach services, screening point services and employer-based malaria control programs through informal private providers, with a focus on areas with high concentrations of mobile and migrant populations and confirmed artemisinin resistant area (Tier 1). A network of 1,264 VMWs, Private Providers (PPs) and CAP-Malaria mobile teams provides malaria services to over 965,000 people in 1,456 villages in 29 townships under 5 States and Regions.

The main strategic approaches include developing and scaling up of vector control measures, improving quality diagnosis and treatment and M&E system, creating enabling environment for NMCP, promoting use of strategic information for malaria control, and strengthening malaria control services for mobile migrant populations.

In responses to the mid-term evaluation conducted in Year 3 and the USAID Regional Inspector General (RIG) team audit in quarter 1 Year 4, CAP-Malaria had adjusted Year 4 activities and targets in close consultation with PMI|USAID technical team. In a continuous effort to improve project Monitoring and Evaluation (M&E) system and relevant human resources, additional key staffs have been added at the township and central levels field, along with M&E activities which include routine data quality audits and training for relevant staffs.

The project aims to strengthen malaria service delivery systems through training VMWs, health care providers, laboratory technicians, and local community-based organizations (CBOs) as sub-grantees, equipping them with rapid diagnostics tests (RDTs), microscopes, and anti-malarial drugs, and establishing systems for ongoing supervision. Long-lasting insecticide-treated nets (LLINs) were distributed, accompanied by community mobilization to promote LLIN use to prevent malaria. Early diagnosis and adherence to appropriate treatment were scaled-up. Activities such as School BCC, BCC through Bust/Motor-bike Taxi system, video show, billboard establishment, World Malaria day help to promote malaria behavioral changes among target populations and mobilize communities to increase awareness and participations in malaria control activities in their communities. Community Health Financing, aimed to referral patients with malaria complications and without means to seek proper care, also helped to empower community as they is local maintained by the community through the community health groups (CHG).

Village based strategy were used to prioritized and guide intervention, particularly case finding and management activities. CAP-Malaria applied varied approaches of case finding to increase quality access to resident and migrants suspected of malaria: community level volunteers through Village Malaria workers and Private Provider (PPs), screening points or fixed clinics in strategic locations, and mobile malaria clinics. In selected locations classified as high malaria that are in remote areas, intensified case finding activities were also implemented either outside of project villages (in consultation with the national program and health departments) where mass screening and treatment are implemented. Case management activities to contain in ARM areas were strengthen through implementation of Directly Observed Treatment (DOT), and a model of community based Day 3(+) case management and response.

Strategic information can be obtained from CAP-Malaria supported entomological survey and LLIN monitoring on ownership and usage support to CBO (sub-grants). Following assessment reports from Malaria Consortium/NetWorks which highlighted the “hidden burden” of malaria in pregnancy during the CAP-Malaria Burma-Cambodia-Thailand working group meeting in Yangon, in April 2013. CAP-

Malaria implemented activities to integrate malaria services with antenatal care services, which systematically screened all pregnant women in their first trimesters in participating rural health centers in Year 3. After reviewing data, CAP-Malaria discontinued the activity in Year 4 Quarter 2 due to low case detection rate observed compared to routine case detection method.

To increase the availability of strategic information, CAP-Malaria worked with the Vector Borne Disease Control Division (VBDC) to strengthen their supervisory roles at different levels within the health system which generate and utilize relevant data. At the national level, CAP-Malaria is represented in the Technical Strategic Group, and serves as the Secretariat in the sub-Technical Strategic Group on Monitoring and Evaluation (M&E). At the Regional/State Level, CAP-Malaria participate and share information at the partner's meeting. In addition, joint supervisory visits were conducted with in project areas provided to monitor quality of diagnosis and treatment. Border malaria control issues are also addressed through the twin-cities working group model.

1 INTRODUCTION

Several factors contribute to increasing drug resistant malaria in Burma, particularly along the border areas with Thailand. Political instability in some regions (such as Rakhine and Kayin in some of the areas where CAP-Malaria operates) have led to large movement of population and place addition burden on an already weak infrastructure and stretched resources. In other parts of the country, investment in mega development projects and agri-businesses (such as in Tanintharyi) have resulted in large migration of workers and their families in search of job opportunities from non-endemic and non-resistant areas to endemic and resistant areas.

CAP-Malaria goal:

Reduce malaria burden (morbidity and mortality) and delay and prevent the spread of artemisinin resistant malaria (ARM)**.**

Objectives:

- Development and scale-up in cost-effective vector control interventions to reduce the transmission of malaria;
- Improving the quality and effectiveness of diagnosis and treatment of malaria at the community and health facility levels;
- Supporting to reduce management bottlenecks of the national malaria control programs (NCMPs) and local institutions to implement and monitor malaria control activities; and
- Supporting the establishment and maintenance of strategic information for malaria control.

Target Beneficiaries, and Geographical Focus

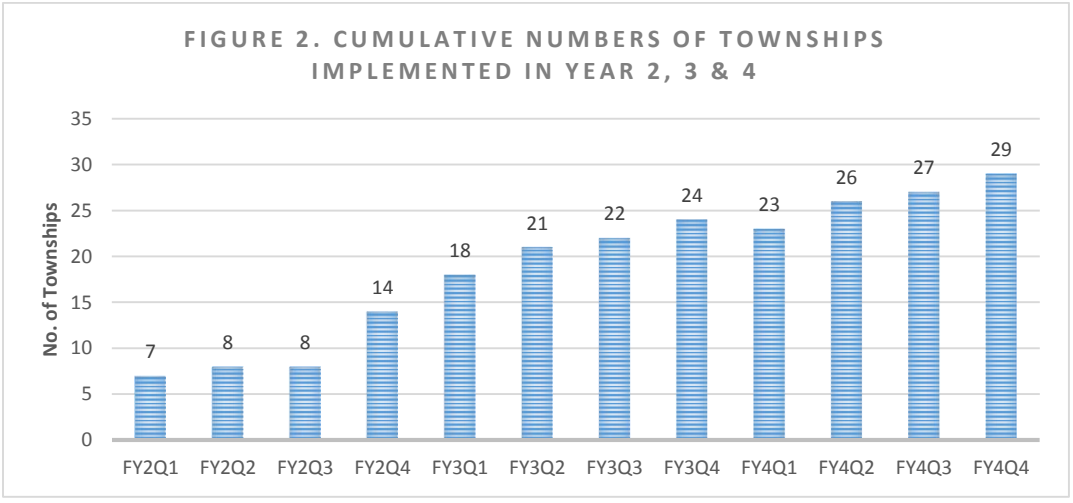
At the end of Year4, total population covered was 965,522 people in 1,456 villages and worksites. Total estimated population covered is approximately 1 million including migrants, IDP, and Refugees (estimated at around 10% of the resident population).

Table 1. CAP-Malaria village, households, population coverage by the end of Year 4

State/ region	# of Townships	# of villages, worksites	# of Households	#of population	#of VMWs, PPs
Tanintharyi	**10**	**505**	**55,701**	**241,792**	**305**
Rakhine	**7**	**365**	**99,305**	**394,022**	**365**
Bago	**3**	**147**	**17,178**	**80,000**	**157**
Kayin	**6**	**331**	**27,686**	**147,022**	**329**
Kayah	**3**	**108**	**19,116**	**102,686**	**108**
Total	**29**	**1456**	**218,986**	**965,522**	**1264**

Remarks *– The number of Internal Displaced Person in Tanintharyi Region and Kayin State are estimated to be around 77,600 people and 106,800 people, respectively. (Data source: Oxford Burma Alliance 2011). The number of refugee in Tanintharyi Region was reported to be around 6015 people (Data Source: UNHCR updated on June, 2014, South-East Asia Myanmar Information Management Unit.)*

Figure 1. Project townships, Year 4



2 PROGRAM KEY ACHIEVEMENTS (OCT 2014 –SEP 2015)

Prevention

- A total of 187,069 LLINs were distributed at villages, work sites, ante-natal clinic.
- Supported NMCP with transportation cost and per diem for distribution of USG-LLINs from township level to villages (including areas outside of CAP-Malaria). A total of 213,273 LLINs (target 553,500 LLINs) were delivered to the villages.
- A total of 184,944 people including 35,822 migrants were covered by Inter-personal Communication (IPC).
- For non-IPC activities
    - 6,983 group health talk sessions were conducted covering 241,415 population including 11,676 migrants.
    - Print material: 380,405 pamphlets and 2,134 posters were distributed
    - Audio/Visual: Video shows during malaria outreach activities in the villages reached an estimated 29,514 people and another 225,000 passengers through the private bus and boat systems.

Case Management

- Trained 1,297 health workers in malaria diagnostics (microscopy or rapid diagnostic tests, RDT): 572 VMWs and PPs, 725 BHS staff and laboratory technicians.
- Provided technical support to the NMCP to train 103 laboratory technicians (not included in the quantitative numbers in this period).
- 1,254 health workers trained in malaria case management with ACTs: 572 VMWs and PPs, and 682 BHS
- 230,317 people were tested for malaria through different approaches (*e.g.* VMWs, screening points/stationary clinics and private providers, mobile clinics and intensified case detection)
- 7,843 cases were positive where 7,792 cases were treated and 51 cases were referred to hospitals. Total 7,766 positive cases (99.67% of treated cases) were treated according to National Treatment Guidelines (NTG).
- Successfully referred 86 patients who fits the criterial for referral (e.g. pregnant women, children under 5 years old, and severe malaria symptoms) to the nearest hospitals.
- Day three case management activities were implemented in 12 townships covering 80 villages and worksites. A total of 413 *Pf* cases completed the Day 3 follow-up (94.9% completion) and 10 cases were found to be day 3 positive (day 3 positive rate 2.4 %)
- A village-based strategy (VBS) was used to prioritize 682 villages of Tanintharyi Region and Rakhine State: 272 (39.9%) villages were low risk, 243 (35.6%) villages were moderate risk, and 167 (24.5%) villages were high risk. Appropriate approaches were developed according to the malaria risk.
- Intensified case finding (ICF) was done in 287 villages and work sites in 19 townships. There were 45,146 people (total pop. 85,545) tested and 1,473 cases (1,258 *Pf*, 184 *Pv*, 31 *Pf*mix, 3.3% MPR) identified and treated according to NTG. These figures included 34 worksites where 3,031 migrants tested and 51 were positive.

3 CHALLENGES ENCOUNTERED AND OPPORTUNITIES OCCURRED

There are many challenges in the project implementation, but we try to overcome most of these challenges. Some challenges will require changes in the policy such as engaging with uniform services, and protocols for those patients who tested negative for malaria.

Increasing difficulties in findings malaria cases – Number of malaria positive cases became rare as project scale-up malaria control activities. CAP-Malaria implemented targeted case finding strategy which utilized village wise malaria case report from project database together with the national malaria

information system (MIS) to map out potential malaria hotspots. This allowed us to expand case find activities into new geographical areas in a targeted manner. The information helped CAP-Malaria and local health departments to be more efficient in prioritizing malaria control activities in resource limited settings.

Implementation of activities in Non-state Actors' areas – Activities to be implemented in Non-state Actors' (NSA) areas required continuous negotiation to improve coverage and to implement the activities. One subgrant was terminated due to limitation of access.

Temporary suspension of activities in Hpa-an, Kawkareik and Myawaddy villages due to armed conflicts – During early weeks of October 2014 and March 2015, conflicts among armed groups in Kayin State caused interruption in CAP-Malaria field activities. During this period, malaria activities in Kawkareik township were temporarily stopped and CAP-Malaria staffs were mobilized to Hlaingbwe township to continue malaria services after lengthy negotiation with counterparts and NSA.

Flooding in project townships (Tanintharyi Region, Rakhine & Kayin state) – Massive flooding occurred in all project townships of Tanintharyi Region and Kayin State between July and August 2015. Some of the field teams were temporarily stranded in the villages where they were implementing activities. According to the Health Department, over 3,000 households in Ann Township and over 1,000 Households in Toungup Township were affected by flash flood in June 2015. Rakhine State Health requested, and CAP-Malaria has committed to mobilize 30,000 LLINs to flood stricken areas.

Mobile /Migrant Population – Some of the mobile/migrant populations are working in hard-to-reach areas where malaria transmission can be intense. Their worksites are difficult to identify due to their remoteness. Self-medication and incomplete treatment with poor quality antimalarial often obtained from quacks are common practices that can fuel the drug resistant problem. Where appropriate, CAP-Malaria work with the private sectors to increase access to migrant population to expand the reach of malaria prevention and control services to these population.

Working with Informal Private Providers (PPs) – Most of the PPs in CAP-Malaria project are quacks who provide informal health care services to the community; these quacks are unlike the private practitioners who has formal medical training.1 Though informal and not properly regulated, they are a part of the local health system. In some areas where there is no formal health facilities or formal service providers, quacks may be the only source of health services in the communities. Quacks have been providing unregulated malaria treatment services to residents and migrants in ARM transmission areas which is the main reason for CAP-Malaria's engagement with quacks. These informal PPs were recruited as volunteers and received training so they can provide appropriate malaria diagnostic (by RDTs) and treatment services. Our network of PP, as CAP-Malaria volunteers, also participated in LLIN distribution and health education. Through joint technical support and supervision with township medical offices, these services can be sustainable after phasing out of CAP-Malaria.

Special high-risk population – Military personnel are at high-risk for malaria due the nature of their occupation. Their movement between Tier 1 areas and other areas can lead to spread of resistant parasite. There are many military personnel in Tanintharyi Region, Rakhine State and Kayin State, as these are area affected by internal conflicts. Some areas in Rakhine have very high *Pf* parasite load.

Forecasting and Quantification of RDT & ACT – At the beginning of the project, it was more difficult to quantify RDT & ACT requirements due to the lack of adequate information in project areas which had led to oversupplies. In Year 4, CAP-Malaria is able to use project data to better quantify malaria commodities needed.

Lack of services apart from malaria – We have demonstrated reduction malaria cases in project areas over the past 3 years of implementation, but there's still a need to maintain activities to prevent resurgence. At the same time, non-malaria fever are being detected by volunteers. If VMWs are unable to provide treatment or advice

[1] Quacks are private health service providers in Burma who does not have formal medical training. CAP-Malaria work with this group because they are often the first "health provider" that villagers seek help from. PMI's partner such as PSI also work with private providers through their "Sun Network", however, these are private practitioners who had formal training in medicine.

on non-services malaria fever, this may effect utilization of VMW in the future. Opportunities to upgrade VMWs with additional skills in basic health services along with stronger linkages with BHS at health facilities for case referrals should help to maintain VMW utilization rate.

4 PROGRAM PERFORMANCE DURING REPORTING PERIOD

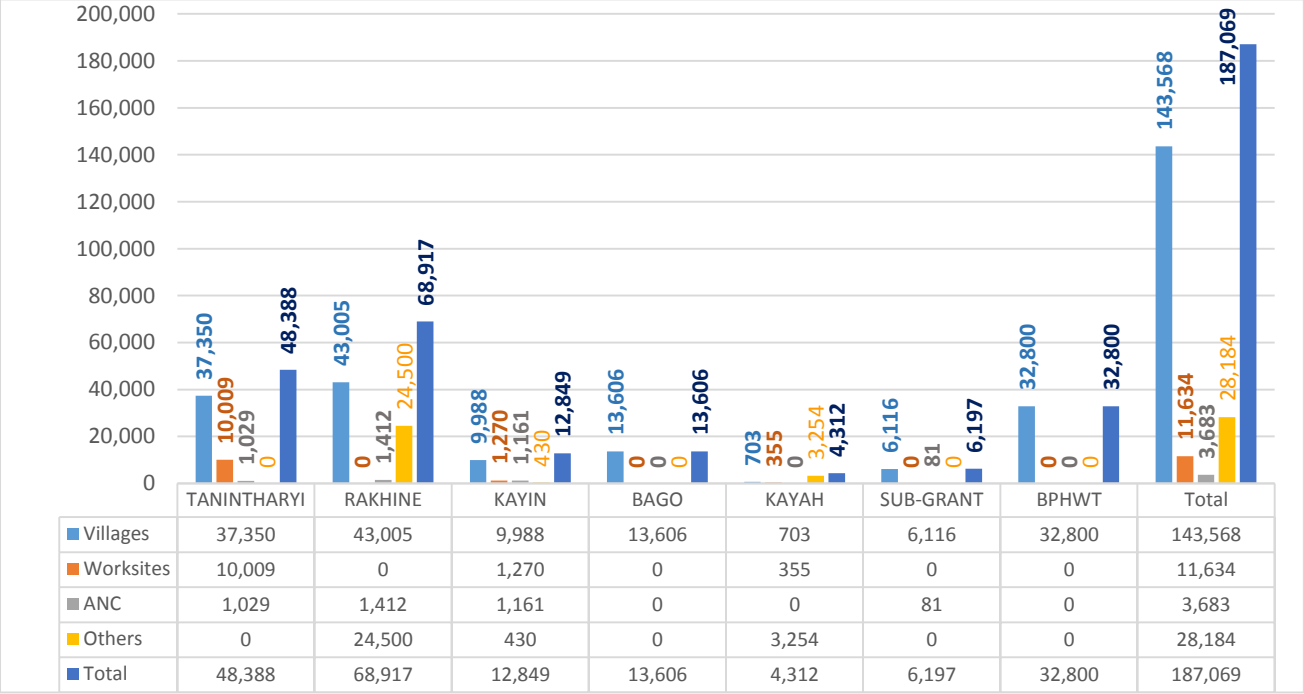
4.1 IR 1: Use of preventive interventions among community at risk increased

4.1.1 Community level distribution of ITNs

4.1.1.1 LLINs distribution in villages, work sites and others

In Year 4, a total of 187,069 LLINs had been distributed through different approaches (125% of target). A large proportion of LLINs (76.7%) were distributed to cover 218,352 residents (97.25% population coverage) in 49,563 HHs (98.06% HH coverage) in 531 malaria endemic villages. CAP-Malaria takes more pro-active approaches to reach out to these high-risk group including mobile team case finding activity and engaging with private businesses. Another 11,634 LLINs (6.2% of LLINs distributed) were distributed to cover 11,754 migrant workers and family (99.84% of migrant population) from 3,953 worksites.[2] Another 3,683 LLINs (1.97%) were distributed to pregnant women at the ANC clinics during their first visit. In addition, 24,500 LLINs were distributed to flood affected villages in Rakhine State, and 2,705 LLINs to the Kayah State Public Health Department. (See Annex 1 for summary of LLIN distribution by township.)

Figure 3. Summary of LLIN distribution through different approaches by State/Region in Year 4



	TANINTHARYI	RAKHINE	KAYIN	BAGO	KAYAH	SUB-GRANT	BPHWT	Total
Villages	37,350	43,005	9,988	13,606	703	6,116	32,800	143,568
Worksites	10,009	0	1,270	0	355	0	0	11,634
ANC	1,029	1,412	1,161	0	0	81	0	3,683
Others	0	24,500	430	0	3,254	0	0	28,184
Total	48,388	68,917	12,849	13,606	4,312	6,197	32,800	187,069

Table 2. LLIN distribution in villages, Project Year 4, October 2014-September 2015

HH distribution	Tanintharyi	Rakhine	Bago	Kayin	Kayah	Sub-grant	Total
No. of villages	142	198	47	88	10	46	**531**
HH present	15,077	20,851	6,919	4,175	489	3,031	**50,542**
HH covered	14,176	20,851	6,919	4175	489	2,953	**49,563**
HH coverage	94.0%	100%	100%	100%	100%	97.4%	**98.1%**

[2] CAP-Malaria also distributed LLINs to work sites outside of the project areas because other local implementing partners distribute LLINs to the villages rather than work sites. Along with LLIN distribution, case finding and treatment service through mobile team and migrant volunteers are provided to worksites.

HH distribution	Tanintharyi	Rakhine	Bago	Kayin	Kayah	Sub-grant	Total
Population present	71896	85,044	30,383	19,536	1,965	15,693	**224,517**
Population covered	67155	85,044	30,383	19,536	1,965	14,269	**218,352**
Population coverage	93.4%	100%	100%	100%	100%	90.9%	**97.3%**
LLIN distributed	37,350	43,005	13,606	9,988	703	6,116	**110,768**
Pop/LLIN	1.80	1.98	2.23	1.96	2.80	2.33	**1.97**

Table 3. LLIN distribution in worksites (Oct 2014 to September 2015)

Worksite distribution	Tanintharyi	Kayin	Kayah	Total
Villages/Worksites	110	24	15	149
HH present	5,926	792	348	7,066
HH covered	5,922	792	348	7,062
HH coverage%	99.93%	100%	100%	99.94%
Pop present	17,604	2146	375	20,125
Pop covered	17,572	2146	375	20,093
Pop coverage%	99.82%	100%	100%	99.84%
LLIN distributed	10,009	1,270	355	11,634
Pop/LLIN	1.76	1.69	1.06	1.73



Photo 1-3: LLINs on their way to Thit Mu Phar, Mae Palae & War Kee Villages in Myawaddy for distribution (Myawaddy). Photo: CAP-Malaria, Burma, 2015.

4.1.1.2 Support to NMCP to distribute USG-LLIN

CAP-Malaria is providing resources to help NMCP distribute 553,500 LLINs purchased by USG fund in Year 4. Deliver/JSI procured the LLINs and provided logistic support up to the township level. CAP-Malaria/URC support transportation cost to move LLINs from township levels to the villages and per diem of staffs and lodging cost for VBDC staff from Regional and Township Health Offices to supervise and monitor distribution of LLINs in the villages. CAP-Malaria also provided the technical support during planning and provided training on financial management and oversight. Because of delay arrival of the LLINs and in-country flood disasters, a total of 213,273 LLINs were delivered to the villages. The remaining will be distribution in Year 5. These results are not included in the quantitative numbers in CAP-Malaria Y4 annual report, as they will be reported directly by NMCP to USAID|Burma mission.

4.1.1.3 Bed net impregnation

Ordinary bed nest are used by the community, likely due to thee size options. Utilization rate of ordinary net was ~17% among 30,045 people monitored. Hence, insecticide impregnation of bed nets was included in Year 4 to provide protection to those who use ordinary nets, but efforts were concentrated in townships where information suggested higher rate of ordinary net use, particularly in Kayin State (yellow highlight in Table 4).

Table 4: Bed net Impregnation, Year 4

Township	# of villages covered	# of HHs covered	# of pop. covered	Number of Impregnated bed nets				# of KO Tab used
				Single size	Double size	Family size	Total	
Ann	38	575	2,754	41	185	625	851	851
Gwa	31	2,267	8,287	629	1,445	936	3,010	3,010
Gwa	16	1,098	4,348	150	937	190	1,277	1,277
Hlaingbwe	12	923	5,091	582	894	380	21,856	1,856
Hpa-an	46	1,034	5,848	263	638	690	1,591	1,593
Hpa-pun	12	1,165	6,899	520	947	542	2,009	2,009
Kawkareik	33	1,725	9,566	511	958	1,729	3,198	3,201
Kyainseikg	5	106	590	32	154	90	276	276
Myawaddy	17	707	3,411	166	338	811	1,315	1,315
Grand	**210**	**9,600**	**46,794**	**2,894**	**6,496**	**5,993**	**15,383**	**15,388**

4.1.1.4 Monitoring on net coverage and net usage

Monitoring on net ownership and usage was conducted in 16 townships covering 510 villages and 6,624 households. The result in Table 5 is the cumulative data of net ownership and utilization collected through the lot quality assurance method (12 households/ village). This LLIN monitoring exercise is not a survey, but served as a guide for the team to take appropriate action if LLIN coverage falls below the recommended national LLIN coverage or if LLIN utilization is poor. We consider 2.5 persons/LLIN and at least 80% of population slept under LLIN as standard. Action such as LLIN top-up or IPC/HE will be conducted to improve LLIN coverage and utilization rate.

In Bokpyin and Kawthoung townships, the low LLIN coverage rate can be explained by the higher migrant populations. For example in Kawthoung township, nearly all of the places monitored are worksites (e.g. Yuzana palm oil plantation) with high turnover of migrants. The low LLIN utilization rates are likely due to the insufficient number of LLINs, particularly among migrant populations. To address large LLIN gaps in Bokpyin and Kawthoung among migrants, a portion of LLIN stock was reallocated from nearby townships for LLIN top-up along with HE to promote LLIN care and use.[3]

In contrast, the 4 townships of Kayin State showed sufficient LLIN coverage, yet low LLIN utilization rate. One possible reason for that is because of culture, ethnicity. For these, CAP-Malaria/URC advise partners to emphasize IPC/HE to promote use of LLINs.

[3] Following LLIN monitoring activities, CAP-Malaria team then identify which village or worksites experienced LLIN gaps and conducted LLIN top-up to achieve coverage below 2 LLIN per person. These included 7 worksites in Bokpyin and Kawthoung which had a range of 3 to 10 person per LLIN. Following monitoring and top-up, all 7 worksites had 2 LLIN per person or lower.

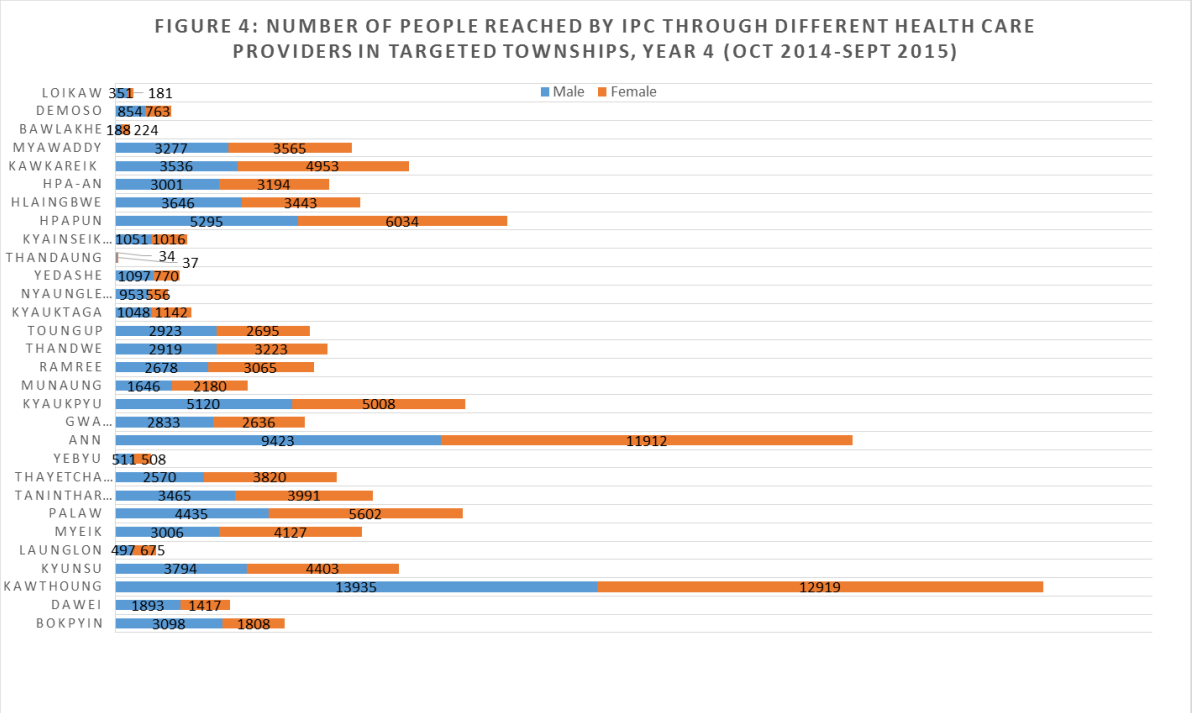
Table 5: Township wise monitoring on net coverage and net usage

Township	Ann	Munaung	Bokpyin	Myeik	Palaw	Kyunsu	Kawthoung	Dawei	Tanintharyi	Thayetchaung	Ramree	Gwa	Hlaingbwe	Hpa-An	Kawkereik	Myawaddy	Gwa (MNMA)
# of villages/Name of villages	73	65	19	12	23	12	11	4	12	1	90	18	47	62	34	24	3
HH Number	876	780	228	144	276	144	132	48	144	12	1080	216	600	1020	600	288	36
# Of HH Members	4225	3004	861	746	1456	765	486	196	722	49	4810	797	3557	6162	3559	1487	182
# Of Migrants In HH	15	48	6	21	23	29	486	6	11	0	2	2	372	1357	443	44	3
Total # of Bed Nets In Your House	3012	2316	488	515	871	476	228	113	516	48	3474	804	1762	4174	2217	707	88
# of Ordinary Nets	975	764	221	137	169	112	100	29	110	21	1159	452	269	1225	397	258	16
# of LLINs Received Within 3yrs	2037	1552	267	378	702	364	128	84	406	27	2315	352	1493	2949	1820	449	72
Population Per LLIN	2.07	1.94	3.22	1.97	2.07	2.10	3.80	2.33	1.78	1.81	2.08	2.26	2.38	2.09	1.96	3.31	2.53
# of People Slept in Your House Previous Night Including Visitors	4103	2928	848	743	1408	777	482	182	694	49	4739	781	2931	4943	2772	1486	179
# of People Slept Under Bed Nets In Your House Previous Night Including Visitors	3792	2587	733	705	1251	698	449	168	640	49	4693	774	2322	4765	2256	1351	161
% of People Slept Under Bed Nets	92.42%	88.35%	86.44%	94.89%	88.85%	89.83%	93.15%	92.31%	92.22%	100.00%	99.03%	99.10%	65.28%	77.33%	63.39%	90.85%	89.94%
Under Ordinary Nets	703	437	302	120	122	116	184	30	67	13	250	276	262	1454	292	461	25
Under LLINs	3089	2150	431	585	1129	582	265	138	573	36	4443	498	2060	3311	1964	890	136
% of People Slept Under LLINs	75.29%	73.43%	50.83%	78.73%	80.18%	74.90%	54.98%	75.82%	82.56%	73.47%	93.75%	63.76%	57.91%	53.73%	55.18%	59.85%	75.98%
% of People Slept Under OrdinaryNets	17.13%	14.92%	35.61%	16.15%	8.66%	14.93%	38.17%	16.48%	9.65%	26.53%	5.28%	35.34%	7.37%	23.60%	8.20%	31.00%	13.97%
# of Migrants Slept In Your House Last Night Including Visitors	15	44	47	20	18	34	448	4	11	0	0	1	30	70	40	41	3
# of Migrants Slept Under Bed Nets In Your House Previous Night Including Visitors	6	26	46	10	14	20	418	3	10	0	0	1	10	67	22	37	2
Under Ordinary Nets	1	4	8	8	3	7	173	0	0	0	0	1	0	23	3	22	0
Under LLINs	5	22	38	2	11	13	245	3	10	0	0	0	10	44	19	15	2

4.1.2 Interpersonal Communication (IPC)

Figure 4 shows total of 184,944 people (48% M, 52% F, 19% migrant) were reached through individual IPC (face to face HE sessions during malaria screening service).

Note: CAP-Malaria adjusted the definition of IPC/HE in this repeating period to include individual session to patients (and family members) conducted by VMWs/PP during malaria screening sessions. Because it can be operationally challenging to verify the actual size of group sessions conducted by volunteers, we agreed not include this activity as individual IPC/HE.



4.1.3 Non-Interpersonal Communication (non-IPC)

Non-IPC communication for CAP-Malaria/Burma include group HE sessions conducted during community outreach by mobile team, LLIN distribution campaign conducted by CAP-Malaria staff, mobile teams, with VMWs or PPs. Community mobilization at special events and video shows are also included in non-IPC Communications approaches.

Table 6. Summary of non-IPC activities by CAP-Malaria

Main activities	Estimated people reached	Remark
Group IPC by PP	~10,296	
Video show at HF	15,612 (6,799 M, 8,813 F)	
Video show during community outreached	13,902 (6,019 M, 7,883 F)	
Bus/Taxi malaria education and video show	243,775 (5,490 trips)	Private bus companies participated in the BCC efforts and provided regular information to CAP-Malaria. Over 8000 trips were taken on buses that provided printed information to passengers. A selected fleet of buses and boats also featured malaria education video during 5,490 trips.
Malaria Day	~8,312	13 events organized

	50 roadside billboards	Billboards in local languages as necessary
HE during HH LLIN distribution	218,352	Only those present at the time of LLIN distribution
HE during LLIN distribution in worksite	20,093	Only those present at the time of LLIN distribution
Distribution of print materials	380,405 pamphlets 2,134 posters	By project and health staff, VMWs, PPs. See Annex 5 for samples of print materials
School based malaria education *Introduction of BCC malaria toolkit designed to complement the national health education curriculum through classroom and play activities.*	*~12,996 students (135 schools)*	*Internal assessment conducted after 10-months and training of teachers in Year 3.* *Results were analyzed and summarized in Year 4 Semi-annual report* *Method: PPS cluster-sampling selected 422 children from 20 schools. In addition, 5 FGDs and 10 informant interviews were conducted.* *Results: All children surveyed received high score on their malaria knowledge compared to 45.9% of students at baseline. The qualitative information obtained from FGDs and key informant interviews showed similar observation.*

Photo 4: A young mother of three took an interest in CAP-Malaria pamphlet to better protect her children.

Photo 5-7: Video Show Session (Tote Gyi and Naw Kwar villages, Hpan-an township) & Video Show Session (Kya Ye – Ywar Gyi village, Hpan-an township).

Photo 8-10: CAP-Malaria staff worked with teachers on how to use BCC toolkits at Nyaung YanTaung primary school. Photo: CAP-Malaria, Dawei, Burma.

Photo 11-12: Front and back of the bus ticket used in Kawthoung township featured malaria messages.

Photo 13-14: The bus driver and volunteers assisted the team in putting stickers by the door of the bus and distribute malaria pamphlets. Photo: CAP-Malaria, Burma, 2015.

4.2 IR2: Use of quality malaria diagnostics and appropriate treatment increased

4.2.1 Training of health staff on case management with ACTs

CAP-Malaria provided training for health staffs which included Basic Health Staff (BHS) and lab technicians at rural health centers and VMWs (including PPs) at the villages and worksites. Training on case management (with ACTs) included topics on clinical symptoms, treatment according to diagnostic result and NTG, side effects and patient's education and counseling for treatment compliance, registration and other related forms.

Table 7. Number of people trained on Case Management (ACT) disaggregated by professional group and sex supported by CAP-Malaria in Year 4 (Oct 2014 – Sep 2015)

Region / State	Health Facility staff *(BHS, Lab technicians, etc.)*			Community level Village *(VMWs/PPs/Health Facilitators)*		
	M	F	Sub-total	M	F	Sub-total
Bago East	57	195	252	57	101	158
Kayin	36	233	269	98	139	237
Kayah	20	141	161	21	*79*	*100*
Tanintharyi	-	-	-	9	7	16
Rakhine	-	-	-	30	31	61
Grand total	**113**	**569**	**682**	**215**	**357**	**572**

4.2.2 Training of health staff on malaria diagnostics (RDT or microscopy)

Training on malaria diagnostics (RDTs) included topics on malaria risk factors, clinical symptoms, use of RDTs and safety precautions, and data entry and reporting using patient registration and other related forms, and referral criteria and mechanisms.

Table 8: Number of people trained on Malaria diagnostics (RDT only) disaggregated by professional group and sex supported by CAP-Malaria in Year 4 (Oct 2014 – Sep 2015)

Region / State	Health Facility staff *(BHS, Lab technicians, etc.)*			Community level Village *(VMWs/PPs/Health Facilitators)*		
	M	F	Sub-total	M	F	Sub-total
Bago East	65	205	270	57	101	158
Kayin	36	233	269	98	139	237
Kayah	22	147	169	21	*79*	*100*
Tanintharyi	-	-	-	9	7	16
Rakhine	17	0	17	30	31	61
Grand total	**140**	**585**	**725**	**215**	**357**	**572**

In addition, CAP-Malaria provided technical assistance as co-trainers and co-facilitators for training on malaria microscopy and QA/QC for 103 laboratory microscopists (37 M, 66 F) from the State/Region and Township laboratories. Training sessions were organized by the NMCP with the financial support of the Global Fund.[4]

4.2.3 QA of malaria commodities

4.2.3.1 QA of RDTs at the community level

Following the flood in Ann township toward, CAP-Malaria conducted quality check of RDT from flood affected areas. Briefly, RDTs are collected from randomly selected VMWs in flood affected areas of Ann townships in Rakhine State. RDT distributed to VMWs in Tanintharyi and Palaw townships in Tanintharyi Region were collected as control samples. The RDTs were used in a side-by-side

[4] *These training activities are already reported to the GF and only shown for descriptive purposes to indicate how CAP-M coordinates and leverages resources from stakeholders.*

comparison with microscopy examination by our Chief Laboratory Technician in Ann township. All RDTs tested were from the same Lot (No. 05 DD15005) with the expiry date 2017.03.09, and were recently distributed to VMWs around the same time. Since this is a field assessment and not a study, we did not use a standard control sample set to test the RDTs, rather we used real samples of suspected cases for diagnostic comparisons.

Findings are summarized in Table 9. Although 50 RDT samples from Tanintharyi Region showed 100% agreement with expert microscope reading, we interpreted with caution as none of the suspected patients were eventually diagnosed with malaria. For better comparison, the 50 RDT samples from Palaw showed 100% agreement with no false positive or false negative when compared with expert microscopy. We assessed 710 RDTs collected from VMWs from flood affected from Ann township and observed 98.2% agreement between RDT and expert microscopy results. However, we noticed a higher false positive (FPR 1.8%). The higher FP may be due to the high humidity following flood disasters. New shipment of RDT has already been sent to Ann township.

Table 9: Summary of results from QA RDT tests conducted in Year 4.

Tanintharyi Township		**RDT results**		
		Positive	**Negative**	**Total**
Microscopy results	Positive	0	0	0
	Negative	0	50	50
	Total	0	50	50

Results of Tanintharyi Township	
Percent agreement	100%
Sensitivity	N/A
Specificity	100%
False Positive Rate	0%
False Negative Rate	0%
PPV	N/A
NPV	1.0

Palaw Township		**RDT results**		
		Positive	**Negative**	**Total**
Microscopy results	Positive	5	0	5
	Negative	0	45	45
	Total	5	45	50

Results of Palaw Township	
Percent agreement	100%
Sensitivity	100%
Specificity	100%
False Positive Rate	0%
False Negative Rate	0%
PPV	1.0
NPV	1.0

Ann Township		**RDT results**		
		Positive	**Negative**	**Total**
Microscopy results	Positive	4	0	4
	Negative	13	693	706
	Total	17	693	710

Results of Ann Township	
Percent agreement	98.17%
Sensitivity	100%
Specificity	98.16%
False Positive Rate	1.84%
False Negative Rate	0%
PPV	0.2353
NPV	1.0

4.2.3.2 QA of malaria microscopy within CAP-Malaria activities

There are 13 laboratory technicians employed by CAP-Malaria project to provide diagnostic services during mobile outreach activities or through schedule screening points, as well as special case detection activities such as Day 3(+) *Pf* case management and response activities.

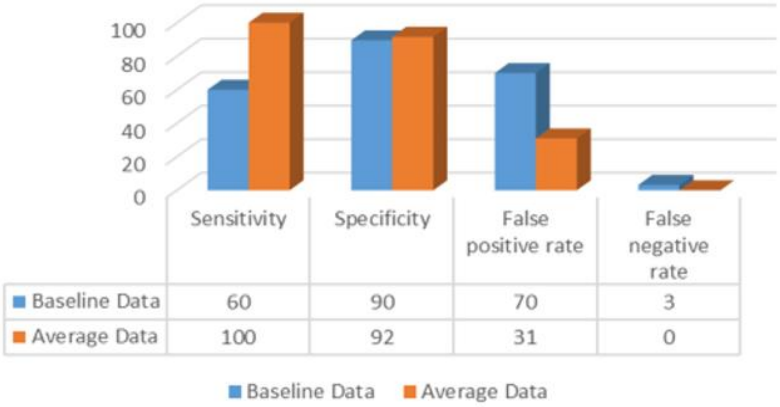
CAP-Malaria also implement monthly slice cross-check (according to national QAQC guideline) with the Chief Laboratory Technician supervising this activity. Based on indictors on sensitivity, specificity, false positive rate and false negative rate, performance of the all technicians were at satisfactory level.

4.2.3.3 Strengthening routine laboratory Quality Assurance System (QAS) at health facilities under the national program in CAP-Malaria project areas (Tanintharyi region).

The NMCP agreed to strengthen lab QAQC at Station hospitals in Tanintharyi Region and assigned the 4 NMCP Medical Technologists to work with CAP-Malaria Laboratory Coordinator. This was followed by advocacy meetings with Tanintharyi Region Health Department, and township hospitals.

SOPs for malaria microscopy QA/QC[5] was developed by CAP-Malaria in close consultation with the NMCP in Quarter 3, Year 3, and endorsed in October 2015. There are two main components in the QAQC plan: routine cross-checks of malaria diagnostic slides at hospital laboratories (internal quality control, IQC), and monitoring and supervision visits of the hospital laboratories and laboratory staff.[6] The results indicated an improvement in 4 key indicators of laboratory QAQC in Tanintharyi Region.

Figure 5. Comparison of IQC results at baseline (January 2015) and 5-months follow-up at 13 station hospitals in Tanintharyi Region.



During the joint lab QAQC visit, CAP-Malaria also interviewed doctors on their utilization of malaria services, particular when RDTs are also available. In general, doctors are aware that microscopy is the gold standard for malaria diagnosis. However, local environment at various hospitals often led doctors to opt for RDT over microscopy. These included non-functional lab services (e.g. non-working equipment and supplies shortage), hospital lab technicians were not available during working hours, and lack of confidence in the skill level of lab technicians. Improvement in the quality of laboratory services through IQC and QA monitoring may increase utilization rate of microscopy services by clinicians.

4.2.3.4 Supply antimalarial drugs

At the field level, township CAP-Malaria teams monitor the stocks of commodities distributed and remained with VMWs and PPs during VMWs meetings and supervisory visits to check and replenish RDT and ACT stocks. In Year 4, CAP-Malaria team observed stock-out of either RDT or ACT 67 times (2.6%) out of 2,551 meetings and visits.

In previous years, WHO estimation of 40% SPR were used by implementing partners to estimate malaria commodities needs. However, information from our field implementation showed much lower SPR rates across project areas (with the exception of selected locations in Ann township). The NMCP and implementing partners in Burma experienced a large surplus of expired malaria commodities received in 2012.

[5] Guidelines for Quality Assurance (QA) and Quality Control (QC) for Malaria Microscopy in Myanmar, October 2014.

[6] Criteria for slide cross check is described in the Reference 5, Guideline for QAQC Microscopy: all positive slides, 20% negative slides, or 100% if total slides are less than 50 slides.

CAP-Malaria systematically dispose of expired commodities. Briefly, all expiry drugs were collected from different levels with cross-checking between inventory records and case finding activities. CAP-Malaria team engaged the township level authority to explain the reasons and method for disposal of expired commodities, including formation of supervisory committee to ensure transparency. In general, the committee verified expired commodities and the amount before and during disposal procedures. For commodities in Yangon storage, CAP-Malaria engaged with NMCP and USAID|Burma mission. With improved data sets, CAP-Malaria can make better quantification of malaria commodities needed.

Photo 15: Committee members verified the list of expired commodities for disposal, Dawei, Burma, August 2015.

4.2.4 Case finding and treatment services

4.2.4.1 Development of village-based strategy in CAP-Malaria target areas.

Malaria is a focal disease and transmission in one townships can varied from one village to another. CAP-Malaria covers large geographical areas with varying malaria transmission and infrastructures. These have implications on targeting the appropriate intervention to an area and implementing appropriate strategy to deliver the intervention package in a sustainable and cost-effect manner. CAP-Malaria developed the village based strategy (VBS) to prioritize areas based-on malaria information, as well as to assign appropriate intervention strategy based-on local environment in a systematic manner.

Briefly, village wise case finding data (Year 3) were used to stratify malaria risks: Annual Blood Examination rate (ABER), MPR, and Annual Parasite Incidence (API, positive per 1000 population at risk). After stratifying the villages, appropriate targeted intervention package are identified for each malaria risk area. CAP-Malaria senior technical team uses these guidelines to monitor and advise the field teams during the implementation according to malaria risk categories and local environment.

Table 10. Village based stratification and responses used by CAP-Malaria to prioritized areas and activities, Year 4.

Village Stratification	Description	Responses	Remark
High risk	ABER ≥10% MPR ≥5%	• Universal LLIN coverage • Routine case finding (e.g. Malaria outreach/ mobile, VMWs, PPs, SPs) • Active case finding (e.g. Day 0/3 responses, ICF) • (IRS is some areas with NMCP) • DOT (if appropriate)	Advance control phase of malaria elimination
Moderate risk	ABER ≥10% MPR <5%	• LLIN coverage • Routine case finding (e.g. VMWs, PP) • Active case finding (e.g. mobile clinics, Day 0/3 responses) in hot spot/hot pop. • (IRS is some areas with NMCP) • DOT (if appropriate)	Pre-elimination phase of malaria elimination
Low risk	ABER ≥10% API <1 per 1000 pop.	• LLIN coverage for migrants • Case finding (e.g. VMWs and PPs) • DOT (if appropriate) • Case Investigation • Intensive surveillance for quick response	

Note: Private providers (PPs), screening points (SPs), intensified case finding (ICF).

Table 11. Categorized villages by malaria risks in Tanintharyi and Rakhine, Year 4.

Sr.	Township	Low risk villages		Moderate risk villages		High risk villages		Total villages
		No.	%	No.	%	No	%	
1	Dawei	11	26.8	13	31.7	17	41.5	41
2	Thayetchaung	0	0.0	6	46.2	7	53.8	13
3	Longlon	6	66.7	3	33.3	0	0.0	9
4	Yebyu	5	55.6	2	22.2	2	22.2	9
5	Bokepyin	22	44.9	16	32.7	11	22.4	49
6	Kawthoung	16	38.1	21	50.0	5	11.9	42
7	Kyunsu	20	34.5	27	46.6	11	19.0	58
8	Myeik	36	61.0	19	32.2	4	6.8	59
9	Tanintharyi	12	19.0	25	39.7	26	41.3	63
10	Palaw	16	29.6	28	51.9	10	18.5	54
	Tanintharyi Region	**144**	**36.3**	**160**	**40.3**	**93**	**23.4**	**397**
11	Ann	9	18.8	8	16.7	31	64.6	48
12	Gwa	11	27.5	21	52.5	8	20.0	40
13	Kyaukpyu	31	63.3	15	30.6	3	6.1	49
14	Munaung	32	80.0	8	20.0	0	0.0	40
15	Ramree	12	37.5	10	31.3	10	31.3	32
16	Thandwe	16	48.5	8	24.2	9	27.3	33
17	Toungup	17	39.5	13	30.2	13	30.2	43
	Rakhine State	**128**	**44.9**	**83**	**29.1**	**74**	**26.0**	**285**
	Grand Total	**272**	**39.9**	**243**	**35.6**	**167**	**24.5**	**682**

4.2.4.2 Case finding activities by CAP-Malaria (Routine)

CAP-Malaria employs 4 main approaches to identify malaria cases in Burma. Results of case finding by each of the four main approaches are summarized in Table 12.

- Active case finding by the mobile outreach team, particular in villages with limited access to health services and villages in identified transmission hotspots.
- Scale-up of malaria services in the community to serve both residents and migrants through the VMWs, targeting at least 1 VMW per target villages.
- Malaria screening points at strategic location to capture migrant population.
- Engage private providers in the CAP-Malaria volunteer networks as the PP are frequently utilized by residents and migrants in very remote areas where health services are limited. Table 10 summarizes case finding activities performed in Year 4.

Table 12. Summary of case finding by CAP-Malaria project, Year 4 (Oct 2014 – Sep 2015)

No	Activity	Tested	Total	*Pf*	*Pv*	*Pfmix*	MPR%
1	*Mobile Outreach*	*120,462*	*2,539*	*2,028*	*449*	*62*	*2.11%*
2	*VMW/Sub-grants*	*88,710*	*4,321*	*2,486*	*1,746*	*89*	*4.87%*
3	*Private Providers*	*19,813*	*919*	*565*	*333*	*21*	*4.64%*
4	*Screening Point*	*1,332*	*64*	*7*	*56*	*1*	*4.80%*
CAP-Malaria Year 4 Total		***230,317***	***7,843***	***5,086***	***2,584***	***173***	***3.41%***

Figure 6 compares case finding activities and MPR conducted by CAP-Malaria in Year 4 by State and Region. MPRs ranged from 0.6% (Bago Region) to 5.16% (Rakhine State covering project and non-project area). Further disaggregation of case finding approaches by townships are in Annex 2.

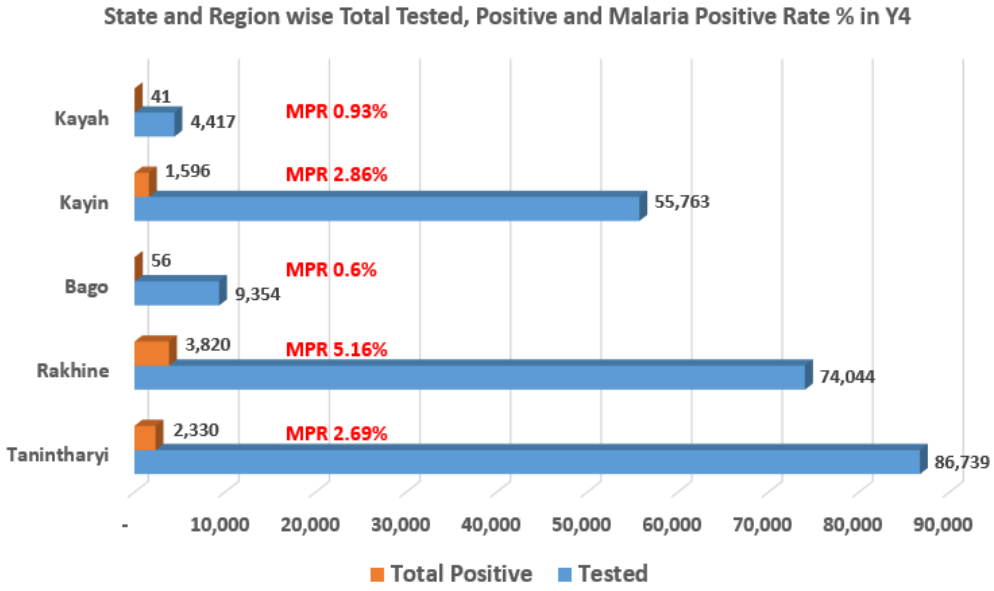


Photo 16: Mobile Clinic at Kyauk Lone Gyi village, Tanintharyi Township.

Photo 17: Mobile clinic at Taline Yar Mining Site, Yebyu Township.

Photo 18: Case finding at Pa Nyint road construction worksite, Yebyu Township.

4.2.4.3 Case management of malaria cases by CAP-Malaria including DOT

To improve treatment compliance, CAP-Malaria implemented Directly Observed Treatment (DOT) for Pf/mixed positive cases in selected areas where feasible. DOT is usually practicing where VMWs or PPs are present, and in some cases by the mobile team. When high *Pf* cases are detected by the mobile team, one member of the mobile team would stay behind in the village to provide full-course DOT. Among those cases where full course DOT is not feasible, a first dose DOT of ACT treatment is provided with proper instruction for completing regimen at home. Among the 1,787 *Pf* and *Pfmix* cases in selected DOT villages, 1,559 positives cases enrolled for DOT (87.2%). Among those enrolled, 1,517 patients (97.3%) completed the 6 doses of DOT including single dose Primaquine.

Note: CAP-Malaria introduced DOT implementation around the same time as Day 3(+) case management. See Section 7.2.4.4.

Table 13. Summary of DOT activities by CAP-Malaria, Oct 2014 – Sep 2015

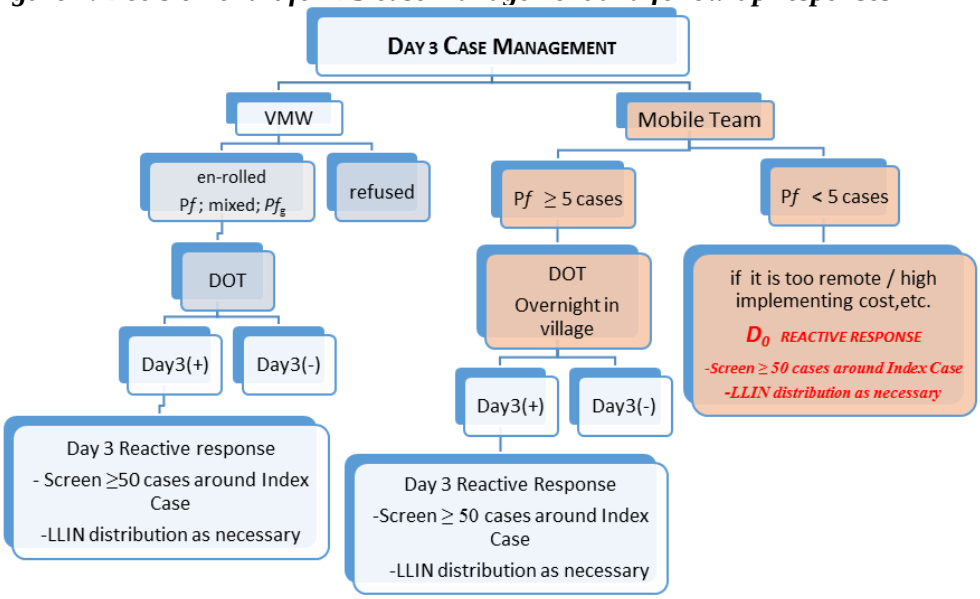
Sr. No.	*Township*	*Grand Total*			
		Total Tested	*Total Positive (Pf+Pfmix)*	*Total Pf+Pfmix under DOT (%)*	*Total Pf+Pfmix completed DOT (%)*
1	*Bokpyin*	*904*	*32*	*30 (93.8%)*	*30 (100%)*
2	*Dawei*	*926*	*74*	*60 (81.1%)*	*48 (80%*
3	*Kawthoung*	*791*	*31*	*25 (80.6%)*	*25 (100%)*

Sr. No.	Township	Grand Total			
		Total Tested	Total Positive (Pf+Pfmix)	Total Pf+Pfmix under DOT (%)	Total Pf+Pfmix completed DOT (%)
4	Kyunsu	2,562	110	105 (95.5%)	103 (98.1%)
5	Launglon	4	1	1 (100%)	1 (100%)
6	Myeik	431	76	70 (92.1%)	60 (85.7%)
7	Palaw	586	79	64 (81.0%)	64 (100%)
8	Tanintharyi	1,894	116	96 (82.8%)	96 (100%)
9	Thayetchaung	727	95	85 (89.5)	84 (98.8%)
10	Yebyu	18	4	4 (100%)	4 (100%)
Tanintharyi Total		**8,843**	**618**	**540 (87.4%)**	**515 (95.4%)**
1	Ann	3,920	713	626 (87.8%)	626 (100%)
2	Gwa	531	85	79 (92.9%)	79 (100%)
3	Ramree	120	10	10 (100%)	10 (100%)
4	Thandwe	1,008	105	81 (77.1%)	81 (100%)
5	Toungup	299	57	52 (91.2%)	52 (100%)
Rakhine Total		**5,878**	**970**	**848 (87.4%)**	**848 (100%)**
1	Kyauktaga	94	6	6 (100%)	6 (100%)
2	Nyaunglebin	24	3	3 (100%)	3 (100%)
3	Yedashe	56	4	4 (100%)	4 (100%)
Bago Total		**174**	**13**	**13 (100%)**	**13 (100%)**
1	Hlaingbwe	2,610	152	124 (81.6%)	112 (90.3%)
2	Hpa-an	464	9	9 (100%)	7 (77.8%)
3	Kawkareik	465	8	8 (100%)	8 (100%)
4	Myawaddy	1,196	17	17 (100%)	14 (82.4%)
Kayin Total		**4,735**	**186**	**158 (84.9%)**	**141 (89.2%)**
Grand Total		**19,630**	**1,787**	**1,559 (87.2%)**	**1,517 (97.3%)**

4.2.4.4 Day 3(+) case management — (This activity not continue in Year 5)

DOT and Day 3(+) case management is pro-active strategy to eliminate *Pf* resistant parasite foci. This activity is usually carried out by VMWs, where feasible, because their presence in the village allow for DOT and patient follow-up (FU) for Day 3 blood slide preparation. Not all *Pf* cases can be enrolled, for example, some patients may be migrants or passed-through the villages for malaria service only. CAP-Malaria mobile team also provided DOT and Day 3 case management in situation where ≥5 cases of *Pf* and mixed cases are found at a site. If Day 3(+) case is found, CAP-Malaria team conducted additional case detection surrounding the index case, LLIN census and top-up among those screened.

Figure 7. Decision chart for D3 case management and follow-up responses



Results for Day 3(+) case detection are shown in Table 14 and Day 3(+) responses in Table 15.

- Activity conducted in 12 townships covering 80 villages / worksites.
- Among 7,773 people tested, 503 *Pf* or *Pf*mix positive cases detected.
- 435 cases enrolled for Day 3 FU (86.5%)
- VMWs provided 1st dose DOT of ACT+Primaquine (PQ) to 385 patients (88.5% of enrolled patients)
- 96.6% (372 patients) who completed 1st dose DOT went on to complete full course DOT (6 doses)
- 413 patients (94.9%) returned for Day 3 follow-up where blood smears were taken.
- Among these, 10 *Pf* Day (3+) cases were detected (2.4% of enrolled patients).
- Mobile team conducted Day 3(+) responses surrounding 9 cases.

Table 14. Day 3(+) case management activities, Year 4 (October 2014-September 2015)

State/ Region	Township	No. of Villages / Work sites	Total Tested	Total Positive (All Species)	Total Positive (*Pf* and *Pf*Mix)	Enrolled for Day 3 FU	Completed 1st dose (ACT+PQ)	Completed DOT (all 6 doses)	Day 3 FU Cases (slides)	Day 3(+) Cases (slides results)
Rakhine	Ann	15	158	191	176	153	144	144	153	0
Tanintharyi	Bokpyin	11	864	37	26	24	24	24	24	0
Tanintharyi	Dawei	1	127	12	6	6	1	1	4	0
Tanintharyi	Kawthoung	11	114	70	36	30	28	28	25	**2**
Tanintharyi	Kyunsu	12	126	117	101	91	91	78	89	**3**
Tanintharyi	Myeik	10	971	69	62	59	34	34	50	**2**
Tanintharyi	Palaw	6	365	51	37	16	13	13	16	0
Tanintharyi	Tanintharyi	5	629	30	23	20	18	18	20	0
Tanintharyi	Thayetchaung	1	26	7	7	7	7	7	7	**2**
Kayin	Hlaingbwe	3	511	56	23	23	19	19	19	**1**
Kayin	Hpa-An	2	2	2	2	2	2	2	2	0
Kayin	Kawkareik	3	287	8	4	4	4	4	4	0
	12 Townships	80	7773	650	503	435	385	372	413	**10**

Photo 19-20: Day 3 Case Management at (1) War Taw Village at night time, Myitta, Dawei (2) Maw Hta village, Dawei Township

Photo 21-23: The way to M Estate, Yuzana Palm Oil Plantation, for Day 3+ follow up

Table 15. Day 3(+) patients and responses

Township	Patient Name Code	Age of patient	Address (Village name)	Day 3 + Follow up response date	Total # tested by RDT on surrounding to D3+ case	Total Positive (all species)	# of Pf/Mixed included	# of LLIN Distributed	Population covered by HE	Remark
Kyunsu	MP	18	Moe Ma Lin	10-Dec-14	111	3	3	-	99	111 out of 128 people were already screened on Day 0. Only HE sessions were conducted.
	AAS	8								
	AAM	4								
Myeik	SD	-	Thar Ko Kwee	29-Sep-14	-	-	-	-	-	Non State Actor areas. CAP-Malaria was not allowed to conduct activities due to changes in KNU leadership.
	SDY	3	Thar Ko Kwee	5-Jun-15	149	36	35	0	120	LLINs were recently distributed by NMCP
Kawthoung	KZO	14	Estate M	2-Feb-15	108	1	1	103	108	
Kawthoung	KHA	19	Special Zone (Taw Gyi Koke)	24-Jun-15	25	0	0	0	21	LLINs were recently distributed by NMCP
Thayetchaung	TTL	8	Phae Thwe	29-May-15	16	2	1	0	25	Nearly all villagers were already tested on Day 0. LLINs were already distributed by NMCP. Only HE sessions were conducted.
	PC	12								
Hlaingbwe	SKDK	4	Kaw Law Kwee	25-Jun-15	82	6	2	7	54	
				Total	**491**	**48**	**42**	**110**	**427**	

Once Day 3(+) and DOT began in selected villages, some cases were still challenging to follow-up due to poor communication and transportation, or if the mobile team cannot remain in the village or return to the village by Day 3. In such case, the mobile team would conduct the response activities on Day 0 responses instead of waiting for Day 3 slide results. Where VMWs were present, they continued to provide DOT.

4.2.4.5 Intensified Case Finding (ICF) — (This activity not continue in Year 5)

In Year 4, VBS was started to explore for more cost effective method to detect higher number of malaria cases. In a routine mobile malaria clinic, mainly symptomatic patients are screened for malaria, where ICF suspected patients with no fever but has other risk factors may be screened, such as those with other symptom and travel history to the forest or forest fringe area, or not those not utilizing bed nets. We also use ICF in new areas with suspected high transmission but with no previous information. The latter cases occurs when CAP-Malaria is requested to assist in areas previously not covered by others implementers or in new migrant settlements.

ICF in CAP-Malaria Project area – Activity covered 153 high malaria risk villages and worksites in 18 townships. CAP-Malaria tested 26,426 people (65% of population) and identified 342 cases (252 *Pf*, 81 *Pv*, 6 *Pf*mix). ICF covered high malaria villages, with Ann contributed the highest number of cases.

ICF at work sites – Activities conducted in 5 townships including 34 work sites. Most of the work sites are rubber plantation, palm oil plantation and fishery. These work sites were not covered by any organization, and 10 of the worksites were not under CAP-Malaria activities previously. Worksites in non-CAP-Malaria areas did not previously have malaria control activities, and therefore, exhibited higher burden of malaria than worksite CAP-Malaria area. About 64% of the cases were contributed by

3 work sites: Tarlay Work site (Charcoal Baking) in Kyunsu; Moe Ma Lin U Than Win fishery Work site in Kyunsu; and Estate M Yuzana Palm Oil plantation work site in Kawthoung.

ICF in non-project area – CAP-Malaria tested 18,720 population (41.73% of population) and identified 1,131 cases (1,006 *Pf*, 103 *Pv*, 22 *Pf*mix). About 96% of the positive cases were contributed from Ann Township of Rakhine State. Similar to observation in the worksite, non-CAP-Malaria had no prior malaria intervention and had higher malaria burden.

Table 16: Intensified Case Finding in CAP-Malaria Project Villages, Year 4

Township	# of villages	Total Pop.	No. Tested	% Tested	*Pf*	*Pv*	*Pf*mix	Positive	MPR%
Bokpyin	6	462	391	84.63%	0	8	0	8	2.05%
Dawei	7	2,980	1,057	35.47%	0	9	1	10	0.95%
Kawthoung	4	860	647	75.23%	8	3	0	11	1.70%
Kyunsu	11	3,445	2,923	84.85%	46	16	0	62	2.12%
Myeik	3	659	614	93.17%	35	5	0	40	6.51%
Palaw	2	411	295	71.78%	7	2	0	9	3.05%
Tanintharyi	2	661	514	77.76%	4	2	0	6	1.17%
Thayetchaung	1	306	207	67.65%	1	1	0	2	0.97%
Ann	20	4,674	2,427	51.93%	93	3	3	99	4.08%
Gwa	11	2,093	662	31.63%	12	3	1	16	2.42%
Munaung	7	2,848	987	34.66%	0	0	0	0	0.00%
Ramree	7	2,699	1,025	37.98%	0	3	1	4	3.35%
Thandwe	8	1,960	766	39.08%	26	1	1	28	3.66%
Toungup	2	790	180	22.78%	0	0	0	0	0.00%
Hlaingbwe	18	4,003	3,688	92.13%	17	11	2	30	0.81%
Hpa-An	8	3,625	3,049	84.11%	1	1	0	2	0.07%
Kawkareik	14	4,042	3,423	84.69%	1	3	0	4	0.12%
Myawaddy	22	4,163	3,571	85.78%	1	10	0	11	0.31%
18 Townships	153	40,681	26,426	64.96%	252	81	9	342	1.29%

Table 17. Intensified Case Finding at worksites in project and non-project areas, Year 4

# of work	Total	Total Tested	#	MPR	Remarks
24	2,236	2,048	0	0.00%	Worksite in project areas.
10	1,223	983 (80.38%)	51	5.19%	Worksite in non-project
Total 34	**3,459**	**3,031**	**51**	**1.68%**	

Table 18. Intensified case finding in CAP-Malaria non-project villages, Year 4

Township	# of villages	Total Pop.	Tested	% Tested	*Pf*	*Pv*	*Pf* mix	Positive	MPR%
Kunsu	12	685	627	91.53%	0	0	0	0	0.00%
Myeik	7	896	804	89.73%	0	0	0	0	0.00%
Tanintharyi	5	772	651	84.33%	2	6	0	8	1.23%
Ann	74	30,232	12,612	41.72%	977	87	22	1,086	8.61%
Gwa	5	758	248	32.72%	0	0	0	0	0.00%
Kyaukpyu	5	5,548	1,500	27.04%	1	0	0	1	0.07%
Munaung	4	818	416	50.86%	0	0	0	0	0.00%
Ramree	9	2,247	601	26.75%	5	9	0	14	2.33%
Thandwe	10	2,099	778	37.07%	15	1	0	16	2.06%

Toungup	2	529	256	48.39%	6	0	0	6	2.34%
Hlaingbwe	1	280	227	81.07%	0	0	0	0	0.00%
11 Townships	134	44,864	18,720	41.73%	1,006	103	22	1,131	6.04%

Photo 24: Intensified Case Finding at Estate M, Yuzana Palm Oil Company

Photo 25: Intensified case finding activity in TZK (Border) Rubber Plantation and 1st dose DOT of ACT+ Primaquine

Photo 26: ICF at Maw Taung No(6), border village, Tanintharyi Township

4.2.5 Supervision of VMWs and PPs

4.2.5.1 Monthly VMW discussion and monitoring

Monthly VMW/PP meetings were conducted in all 29 project townships. CAP-Malaria supervised over 1,000 VMWs (minimum of 1 VMWs per target village), as well as PPs in 37 villages and 7 worksites. Teams collect monthly reports and assess their performance. The coming month work plan would be discussed and assigned the responsibility to each VMWs/PPs, and checked commodity stock.

Figure 7, Kayah State has the highest on-time reporting because of good communication network, and the lowest reporting rate was seen among sub-grants due to the remoteness of their coverage areas and security issues in non-state actor controlled-areas. If volunteers were inactive for several months, CAP-Malarial conducted visits to their villages.

Figure 8. Percent on-time monthly report by VMWs and PP in Year 4

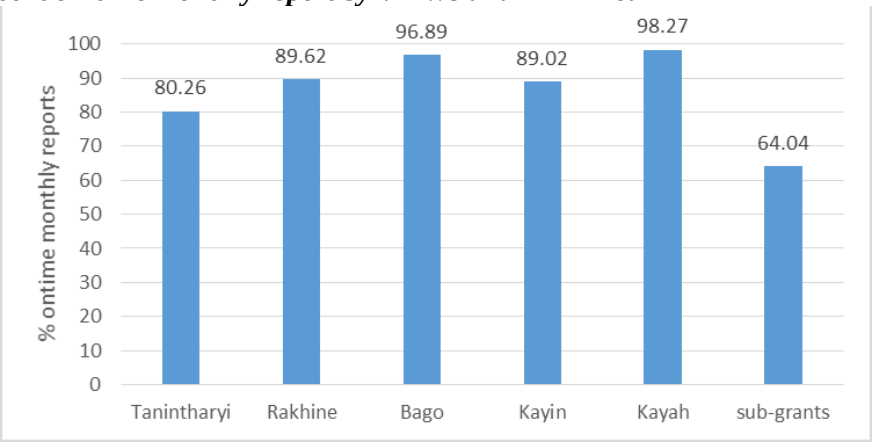


Photo 27: Monthly VMWs meeting at South Dagon Oil Palm Plantation in Bokepyin.
Photo 28: PP meeting at Pyae & Pyae Phyo Htun Rubber Plantation Company in Palaw township.

4.2.5.2 Coordination with BHS for joint supervision of VMWs

CAP-Malaria engaged with BHS to assume supervisory role through joint monitoring and health outreach visits. By integrating VMWs supervision visits with health outreach activities, BHS can feel empowered and take ownership and help to validate the role of VMWs in the community as they assist BHS in providing services such as immunization, deworming program, and vitamin A supplement.

In Year 4, joint supervisory teams (CAP-Malaria and BHS) reached out to 42 villages. Villages with high malaria caseloads were prioritized. Team monitored VMWs activities including checked for completeness of the recorded data (e.g. patient's registration) and verified if necessary, checked stock book and the commodity stocks for expiry items or any stock-out, and replenished supplies as needed. During these monitoring visits, a total of 1,082 suspected cases were screened for malaria and diagnosed 27 malaria cases (25 *Pf*, 2 *Pv*). All positive cases were treated. In addition, 567 people were treated for minor illnesses. Complimentary services provided depend on the needs of the community and BHS's responsibilities. For example, Measles and Rubella vaccination campaign were conducted in 29 villages, vitamin A supplementation and deworming program for children were conducted in 20 villages.

4.3 IR3. Use of strategic information for decision making increased at the national level and local level

4.3.1 M&E of CAP-Malaria activities

4.3.1.1 Regional Inspector General Office team visit to Burma

During October 7-10, 2014 – Office of Inspector General Team conducted of CAP-Malaria Burma activities. Recommendations concerned regarding country level have been amended in updated M&E plan submitted to USAID|RDMA in Quarter 4 Year 3. Also in responses to the recommendations, CAP-Malaria also recruited additional M&E staff, including one 1 senior technical staff (Field Technical Director) in the Yangon office and 4 mid-level technical staff (Data Quality Officer) in the field offices.

4.3.1.2 USAID/RDMA conduct data verification

Following recommendations from OIG audit, CAP-Malaria facilitated USAID|RDMA and USAID|Burma mission on a data verification visits at Yangon Office and CAP-Malaria field offices and villages in Dawei and Hpa-an/Hlaingbwe to verify data at each aggregation levels.

	
Photo 29: Checking storage and inventory log of RDT and anti-malarial at Dawei Office by the USAID DQA team.	*Photo 30: Data verification at CAP-Malaria Dawei office by the USAID DQA team.*

4.3.1.3 Strengthening project M&E staff

Addition senior level and mid-level staff have been added with M&E roles. See project M&E plan for details M&E system.

4.3.1.4 Internal Routine Data Quality Audit (RDQA)

The data verification exercises are taking place at each level of data aggregation as information is collected monthly.

RDQA are conducted by the Data Quality Officer (DQO) who verify monthly data at each aggregation level starting from source document (village levels or activity based), to township level, to the regional level. The target is each township office to be visited by the DQO at least one time. In Year 4, 18 townships (Tanintharyi 10 Townships, Rakhine 7 Townships and Kayin 1 Township) and 48 villages/worksites since Quarter 2.

In addition, country level RDQA are also conducted by the M&E Coordinator (targeting 1-2 townships per quarter). The country level RDQA will also verify an additional data aggregation level at the regional office with the Yangon office. Country level RDQA activities were conducted in February 2015 in Kyunsu township and May 2015 in Toungup township (one month before the flash floods that severely affected Ann and Toungup townships).

4.3.1.5 RDQA coaching by the Regional M&E Team

The Regional M&E Director and Regional M&E Advisor visited Yangon during July 6-10, 2015 and provide RDQA coaching to the M&E team members in Burma. Forty staffs from URC, SCI and sub-grants with a directly role in M&E participated on workshops on RDQA tools and methods for site selection for data verification. Regional DQA, along with country M&E team, conducted RDQA with immediate feedbacks and action plans in Yangon, and at selected sites in Dawei field office and selected villages/work sites.

4.3.2 Coordination and support of strategic information at townships, State/Region and national levels.

4.3.2.1 National level coordination

Technical Strategic Group (TSG) – CAP-Malaria is a participating member of the Technical Strategic Group, and CAP-Malaria Country Coordinator serves as the secretariat for the M&E working group.

National Strategic Plan (NSP) – In October 2014, TSG meeting main objectives are to review and revised M&E frame work and NSP with WHO/Burma as the lead. The NSP 2016-2020 would contain strategy for sub-national pre-elimination in certain parts of country. On May 20, 2015, TSG meeting was held to discuss the NSP 2016-2020 in line with the country's commitment during the 9th East Asia Summit. During the meeting the outlines and contents of existing NSP and areas to be updated and revised, proposed goal, objectives, assumptions, key indicators and targets of NSP were presented. Timeline for development of NSP was presented and endorsed.

Note: At the meeting UNOPS outlined the activities under RAI-Inter Country Component (ICC) Phase II and for expansion to the western border of Burma which included Targeted Malaria Treatment (TMT) in Sagaing-India border by Medical Action Myanmar (MAM). However, the TSG did not to allow this activity without knowing the results of ongoing study on the eastern border.

On September 24-25, 2015, the NMCP held a National Consultation workshop to develop an accelerate progress towards Malaria Elimination in Myanmar was conducted in Nay Pyi Taw, which will be included in the NSP 2016-2020. CAP-Malaria Country Coordinator presented to the meeting a detailed concept of malaria elimination and highlighted that Myanmar should focus on high burden areas for transmission reduction and maintain and further reduce low burden areas for preparation of malaria elimination phase. Small panel discussion groups were organized to get feedbacks and incorporate into the NSP 2016-2020.

National Malaria Treatment Guideline – TSG invited implementing partners including CAP-Malaria Country Coordinator, to form the Core Group to revise the 2011 guideline and policy. The updated policy and guideline would include banning of artemisinin monotherapy, updated 1st and 2nd line for treatment failure, management of mixed infection, pregnancy and infant, stand-by-treatment for migrants, DOT for *Pf* and *Pfmix* infection, treatment with Primaquine and integrate case management by VMWs for those malaria negative fever cases. The final draft was submitted by the Core Group to NMCP in April 2015 and waiting endorsement by NMCP.

Malaria Elimination Strategy (2016-2030) in GMS – The TSG meeting on National Consultation on Development of malaria Elimination Strategy (2016-2030) in GMS was conducted at Mi Casa Hotel

Yangon on February 5, 2015. The objectives of was to obtain stakeholder's input on the second draft of the GMS Malaria Elimination Strategy, that would feed back into the Regional malaria elimination strategy. CAP-Malaria's presentation on lesson learned from village based strategy that could be apply to malaria elimination which received strong interests from participants and WHO.
On May 14-17, 2015, Country Coordinator provided technical expertise in the Training of Trainer (ToT) workshop on malaria control in the context of artemisinin resistant conducted by the NMCP for approximately 70 participants NMCP staffs.

Microstratification workshop – On September 26, 2015, CAP-Malaria supported and provide technical lead during the meeting to review guideline for malaria microstratification, co-facilitated by USAID|Burma and NMCP in Nay Pyi Taw. The meeting was attended by NMCP staffs, representatives from USAID-PMI, WHO, GF UNOPS, Malaria Consortium, 3 MDG, University of Maryland, Mahidol Oxford Research Unit. Presentations were made by Dr. Aung Thi, Dr. Leonard Ortega, Bill Hawley, and Chief Entomologist from PMI-CDC.

4.3.2.2 State/Region level coordination

Tanintharyi Region – Tanintharyi Region Coordination meeting are held in Dawei on a quarterly basis. Participants included the Regional Health Director (RHD), Township Medical Officers, and 4 INGOs American Refugee Committee (ARC), CAP-Malaria/URC, Myanmar Medical Association (MMA), Myanmar Nurses and Midwives Association (MNMA), attended the meeting. All implementing partners share their achievements according to their work plans and updating their geographical coverage and status to determine gaps, particularly for VMWs and LLIN coverage. The Regional Director requested that CAP-Malaria support the distribute LLINs in non-project villages since CAP-Malaria already achieved high LLIN coverage in project villages. CAP-Malaria plans to examine and prioritize these proposed villages to assess the extent of LLIN gaps.

In Year 4, GF-RAI activities also started field implementation phase in Tanintharyi Region. In Quarter 1, coordination meeting were held between CAP-Malaria and GF-RAI/ARC in Myiek to discuss overlapping activities. CAP-Malaria shared information on LLIN distribution and high coverage in the target villages, therefore, ARC will not distribute LLINs in Year 4 to these villages.

Rakhine State – Rakhine Coordination meeting are scheduled on a quality basis or as needed. Meetings are chaired by the State Health Director and attended by representatives from State and Township Health Department, CAP-Malaria/URC, Malteser, Medical San Frontiers (MSF), MMA. Meeting objectives are to share information to improve coordination.

CAP-Malaria shared technical information for intensified active case finding activities and coordination activities outside of normal CAP-Malaria target areas. This meeting platform is also used for coordination in responses to natural disasters such as severe and flash floods in Quarter 2 and 3.

Kayin State – CAP-Malaria project supported state level malaria coordination and planning meetings which were organized in Quarter 1 and Quarter 2 at Kayin State Health Department. Participants include Township Medical Officers, UN and implementing NGOs including CAP-Malaria. Stakeholders presented on their achievements, constraints of their projects and way forward for next quarter.

Bago Region – CAP-Malaria Country Coordinator participated in the Bago Regional VBDC Partners' quarterly meeting led by Bago Regional Health Director and Bago VBDC. While malaria morbidity rate appear to come down drastically, the extent of this reduction still require additional evidence as the annual blood examination rate has also been low (ABER 2.1% in 2013). CAP-Malaria proposed the strategy of village-wise analysis in some of the townships of in Bago, CAP-Malaria shared preliminary information of village stratification of CAP-Malaria target villages with implementing partners.

4.3.2.3 Township level coordination

Township level coordination are done formally and informally as required by the workplan.

4.3.2.4 Coordination with non-state actors ethnic health organization, and private sectors (employers) and providers

***Kayin State* –** Despite cease fires, several outbreaks of fighting erupted in Kayin State and disrupt implementation activities in some townships. Coordination meeting with NSAs are usually on-going to ensure project implementation and safety of the staff and volunteers. In some cases, project had to negotiate for relocation to new locations due to persistent outbreaks of fighting. Coordination with ethnic health organization such as Back Pack Health Worker Team (BPHWT) are also conducted to ensure minimal overlap ion activities.

***Tanintharyi Region* –** The region has a large population of internal migrants and cross-border migrants (those who frequently cross-border to work in Thailand). More than 30 companies (including large plantations and Dawei Deep Sea Project) have participated in CAP-Malaria advocacy and planning meetings.

Total 72 volunteers from private companies and informal private providers were trained as volunteers (PPs) in Year 4. Participants were trained on diagnosis, treatment, DOTS, IPC and how to record activities for reporting. PP were provided RDTs and anti-malarial drugs to conduct case finding and management and provide HE.

Photo 31: Advocacy to private companies in Kawthoung Township. Photo: CAP-Malaria, Burma, 2015

Photo 32: Discussion with KNU Chairman from, Dawei Township. Photo: CAP-Malaria, Burma, 2015

4.3.3 Access and use of strategic information

4.3.3.1 Description of malaria trends in CAP-Malaria project area

Multi-prong approaches for case finding including village based stratification (VBS) approach which was used to guide case finding activities in most of the project townships in effort to streamline and maximize use of resources.

Comparison of MPRs from Year 2 to Year 4 shows a 79.4% reduction of MPRs. In Year 4, the increase in MPR in Quarter 1 and 3 were due to the ICF activities in Ann Township. (Figure 9)

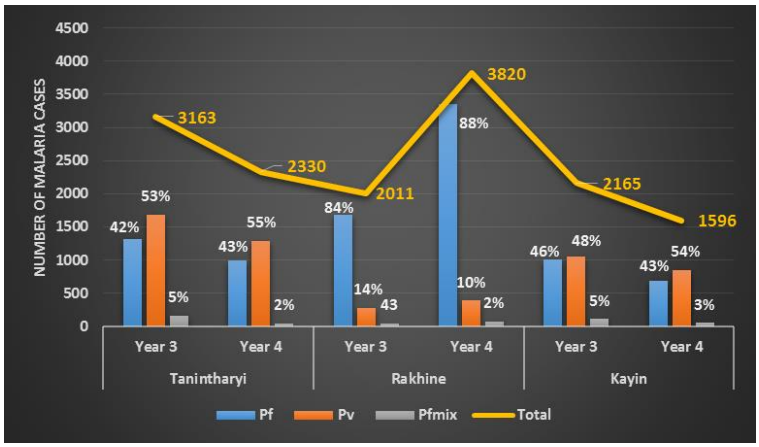
In Tanintharyi, the number of *Pf* and *Pv* cases were reduced, but the proportion of *Pf:Pv* did not change much from Year 3 to Year 4, in spite of an increased in the number of tests performed (Figure 10).

In Rakhine State, the number of malaria cases markedly increased from Year 3 to Year 4, likely due to flood disasters, as well as implementation of ICF in Ann township. The proportion of *Pf:Pv* did not change. *Pf* cases contributed more than 80% of the malaria infection in both Year 3 and year 4.

In Kayin State, situation is similar to Tanintharyi Region where we see a reduction in the number of malaria cases, however the *Pf:Pv* portion remained similar.

Figure 9. Malaria trend under CAP-Malaria project activities in Burma, from Year 2 to Year 4.

Figure 10. Malaria cases identified through CAP-Malaria activities by species, Year 2 to Year 4



4.3.3.2 Description of malaria cases in CAP-Malaria project area

In year 4, a total of 230,317 people were tested through various case finding approaches and 7,843 cases were positive. Data were analyzed by sex, age, migrant/resident and pregnant/non-pregnant.

Table 19. People tested and diagnosed with malaria by CAP-Malaria activity by categories, Year 4

Category		Tested (%)[a]	Positive (%)[b]	MPR (%)[c]
Grand Total		**230,317**	**7,843**	**3.41%**
Sex	Male	111,781 (48.5%)	4,737 (60%)	4.24%
	Female	118,536 (51.5%)	3,106 (40%)	2.62%
Pregnancy [d] *(women 15-49 years old only)*	Pregnant	1,382	83	6.01%
	Non-pregnant	52,467	1,078	2.05%
Residence status	Migrant	27,060 (11.7%)	882	3.25%
	Resident	203,257 (88.3%)	6,961	3.42%
Age	<5 year	30,593 (13.3%)	1,507	4.93%
	≥ 5 year	199,724 (86.7%)	6,336	3.17%

[a] Total number of tests are used to calculate percent

[b] Total number of positives are used to calculate percent

[c] MPR is calculate using number of tests and number of positive within each category.

[d] 44% of women tested for malaria were of women of reproductive age. This include CAP-Malaria VMWs and mobile clinic activities only. This does not include CAP-Malaria supported malaria screening at ANCs.

Malaria by sex **–** More women were tested for malaria than male, and more women (53.2%) were reached by IPC and group health talk services than male (46.8%). Men make up the higher proportion of malaria cases. Both male and female do engage in forest related activities, male are more exposed to malaria as they tend to engage in activities that require longer period in the forest. Based on our observation and an internal gender assessment (report submitted to USAID), women are more vigilance about using LLINs and they are more likely to care for LLINs properly (thereby extending the life of LLINs).

Malaria in pregnancy **–** Pregnant women have higher MPR compared to non-pregnant women of the same age, likely due to their immunosuppression during pregnancy. CAP-Malaria project area covers approximately 1million population with an estimated 12,000 pregnant women (based on reported national birth rate). In Year 4, CAP-Malaria activities and ANC clinic activities (also CAP-Malaria supported) captured 5,390 pregnant women in the target areas with HE and LLIN distribution. Our experience suggested that VMW and malaria mobile team approaches can better capture pregnant malaria patients (1,382 pregnant women tested, 6.01% MPR) more than systematic testing of all pregnant women at ANC[7] (0.07% MPR). This is likely because malaria can be found in remote villages, often inaccessible to ANC services or health facilities. Based on this observation, malaria screening through antenatal care was discontinued in March 2015. However, pregnant women will be screened for malaria if she exhibited symptoms such as fever.

Residents and migrants **–** MPR among migrants and residents were relative comparable, 3.25% and 3.42%, respectively. In Tanintharyi, there are more private companies that employ large number of migrant workers living in migrant communities working in remote sites, such as Yuzana and Dawei Deep Sea Project. In Rakhine and Kayin States, worksites are often situated in low or moderate malaria risk areas, while residents are living in highly malarious area. In some worksites in Rakhine and Kayin State, a large proportion of workers are local resident population, so CAP-Malaria targeted both worksites and high endemic villages for case finding activities and LLIN distribution. As much as possible, the mobile team stayed overnight at the villages to catch migrant and residents after work. According our LLIN monitoring activities, only 29.5% of migrants reported slept under LLINs the previous nights. CAP-Malaria used the information to adjust activities with regards to BCC targeting positive behaviors among migrants.

Malaria and children **–** MPR among children under 5 year is 4.93%, compared to those 5 years and older at 3.17%. Under 5 children are also vulnerable to malaria infection and may leading cause of morbidity and mortality in high malaria prevalence area. Package of services should be provided including malaria together with ARI, pneumonia and diarrhea. VMWs should be trained on integrated childhood management and provided necessary medicine. (See section 7.2.5.2 Coordination with BHS for joint supervision of VMWs)

4.3.4 Gender assessment

A gender assessment was commissioned by CAP-Malaria to obtain information to help project better address gender issues around malaria and to integrate these issues during implementation. CAP-Malaria worked with a technical consultant, Dr. Theresa Devasahayam, National University, Singapore. The assessment involved questionnaires of staff, focus group discussion of beneficiary (residents and migrants separated by sex), and key informant interviews with health staff. In Burma, the gender assessment was conducted in Thandwe township in Rakhine State. Full report was submitted to USAID|RDMA, USAID|Burma and USAID|Cambodia missions.

4.3.5 Outbreak responses in Kyein Chaung village, Tanintharyi township

CAP-Malaria staff noticed a slight increase in the number of cases in village Kyein Chaung village starting in January-February 2015. In March 2015, CAP-Malaria mobile team conducted active case finding in Kyein Chaung village, identified and treated 9 people on this single trip. Preemptive actions were taken by topping-up the community with additional 241 LLINs and additional stock of RDTs and

[7] In year 4, 4,008 pregnant women screened, 3 *Pf* cases (MPR 0.07%) identified, and 3,683 LLIN distributed.

ACTs for VMWs. Even with the additional preventive measures, 136 people were tested by VMWs and 34 cases (32 *Pf*, 2 *Pv*) were treated in April 2015.

CAP-Malaria alerted the Township Medical Officer and CAP-Malaria/Yangon. The mobile team quickly mobilized to Kyein Chaung village to conduct outbreak investigation and implemented ICF in May. Among the 313 people tested (pop. 438), 11 cases (9 *Pf*, 2 *Pv*) were treated. Health talk sessions were conducted emphasizing prevention, early diagnosis, and the need to comply with malaria treatment.

The cases during this outbreak involved higher proportion of children compared to previous months where most cases were adult who engaged in forest related behavior. The unexpected heavy rainfall during this period may have impacted the mosquito population in the village. The preemptive efforts by the team and VMWS allowed for timely detection and responses to the outbreak. CAP-Malaria closely followed the situations, and one case was identified in June.

Please see success story for additional information in Section 8 Success Story.

4.3.6 Malaria situation in Dalett RHC area, 7-months follow-up

Ann Township contributed 55% of total positive cases in southern Rakhine, and most were *Pf* patients (88% of cases), according to project information in Year 3. We analyzed township health facility data to know the extent of the malaria problem beyond our project areas. We then prioritized Da Lett RHC area as highest burden and conducted 2 rounds of ICF activities.

- October 2014 – Targeted 38 villages with 4,685 people under Da Lett RHC. (See Year 4 semi-annual report). The team tested 4,558 people (97.3% of population) and identified 577 cases (535 *Pf*, 30 *Pv*, 12 *Pfmix*, 12.7% *MPR*). LLINs were also distributed.
- December 2014 – ICF activities covered 20 villages (10 villages overlapped with previous ICF round). There were 1,662 people tested and 218 malaria cases (202 *Pf*, 10 *Pv*, 6 *Pfmix*, 13.1% *MPR*) received appropriate treatment. Among the positive cases, 13 positive cases were same persons from 1st round positive cases. Because of high transmission area, it may be due to re-infection.
- May 2015 – CAP-Malaria conducted follow-up visits in 37 villages in. The MPRs had declined in 27 villages by ~2 folds, from 19.17% MPR in Oct 2014 to 6.76% MPR in May 2015. On the other hand, in 9 villages, the MPRs increased by ~2 folds from 10.20% MPR in Oct 2014 to 21.76% MPR in May 2015. These 9 villages are situated in the forested areas and are the most hard-to-reach, far away from health facilities. See Annex 3 for detail results by township.

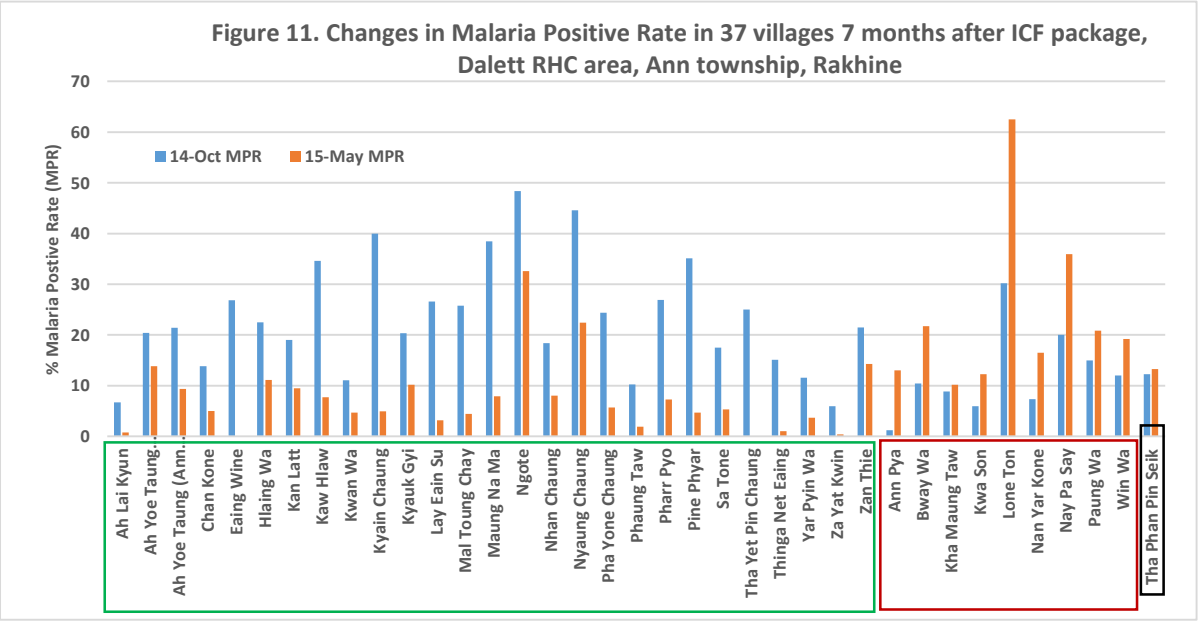


Photo 33: Journey to the villages of "Da Lett RHC"

Photo 34: HE in Thae Kham Htaung village, Ann Township

Photo 35: Intensified Case Finding at night time to cover forest goer

4.3.7 Asymptomatic infections in CAP-Malaria target areas

During case finding activities in described in Section 7.3.6, the mobile team also took body temperature of people tested for malaria in 30 villages. Total of 1,164 people had their body temperature measured during malaria testing with RDT. All villages have adequate number of testing the people. For comparison, we disaggregated information into low and high malaria based on 5% MPR cut-off (see Table 19).

Note: These results are not from a study, rather a review of information collected during implementation of case finding activities.

Table 20. Association between body temperature and MPR in low and high malaria areas.

Villages stratified by MPR during active case detection	# of villages	Fever (≥ 37.2ºC)			Non-Fever (< 37.2ºC)		
		Tested	Positive	%	Tested	Positive	%
<5% MPR (low malarious area)	**12**	**62**	**19**	**30.6**	**694**	**14**	**2.0**
≥ 5% MPR (high malarious area)	**18**	**20**	**17**	**85.0**	**388**	**38**	**9.8**

In the low malaria area, malaria was found among 30.6% of people who presented with fever at the time of malaria testing. MPR was low among non-fever patients. On the other hand, in high malaria area, malaria was found among 85% of people who presented fever at the time of malaria testing. Among patients without fever, approximately 10% were found to be malaria positive.

While there are questions as to the RDT sensitivity for testing non-fever patients, it appears that RDT may be useful in high malaria area. In highly malarious areas where it is not practical for the mobile team to set up microscopy examination or to return to village with treatment results, RDT can be useful in targeted active case detection and treat activities. In low malarious area, RDT is more appropriate for screening people with suspected malaria presenting with symptoms such as fever.

4.3.8 Entomology survey

Entomology surveys were conducted on a quarterly basis (October, January, April, and July) in 2 villages: Htee-Hta village and War Taw village in Dawei township. Four methods of surveys were included: (1) human landing catch; (2) CDC light trap; (3) morning indoor space spray; and (4) animal bait net trap.

In both Htee Hta and War Taw villages, the vector density (especially for *An. minimus*) was highest in April and October. Elisa test to measure sporozoites also showed sporozoites positive in April and October 2015. High vector density, sporozoites positive results and malaria cases are coincide at the same months. (Also see below table and graph). These observations coincided with malaria cases seasonal graph with April to May and September to October as the peak transmission.

Although human landing activity caught a higher proportion of mosquito density from outdoor collection outdoor proportion prepared to indoor collection. High density of *Anopheles* mosquito caught outdoor suggests higher vulnerability to migrant workers and those who work stay outside the houses during evening and night time.

Some caught mosquitoes were dissected and determine if they are infected by malaria using ELISA methods. Results showed that mosquitoes caught were indeed infected with *Pf* and *Pv* sporozoites.

See detail results in Annex 4.

Insecticide susceptibility tests were carried out during every entomology surveys. A 1-year cumulative result showed 100% susceptibility to insecticides among all the *anopheles* mosquitoes collected from each of the survey site.

Table 21. Insecticide susceptibility test in Dawei, Thayetchaung, Toungup and Ann townships, Year 4

Insecticide	***Anopheles species tested***	**No. of mosquito tested**	**Susceptibility status**
0.05% Lambda-cyhalothrin	*An. minimus, An. jamesi, An. maculatus,*	118	100% susceptible
0.05% Deltamethrin	*An. minimus, An. aconitus, An. culicifacies, An. annularis, An. jamesi, An. maculatus, An. phillipinensis, An. (c) J. candidiensis*	220	100% susceptible
0.15% Cyfluthrin	*An. jamesi, An. maculatus,*	55	100% susceptible
0.5% Ectofenprox	*An. jamesi, An. maculatus,*	85	100% susceptible
0.75% Permethrin	*An. jamesi, An. maculatus, An. minimus, An. annularis, An. aconitus*	223	100% susceptible

Efficacy of LLINs distributed was determined by bioassay test. Table 21 shows a 1-year cumulative data. All the LLINs that were in-used for less than 12 months were effective (100% mortality). The 7 LLINs under Intercepter brand, (alphacypermethrin) were in-used for 13-17 months, mortality rate were reduced to 26.7%-56%. Washing frequency is so low (0 – 1 washed), so it would not contribute to reduce efficacy of the intercepter brand.

Note: CAP-Malaria only distributed PermaNet 2.0. Since the entomology survey are conducted jointly with the NMCP entomologists as part of capacity building activities, LLINs distributed by others implementing partners were also included.

Table 22. Efficacy of CAP-Malaria LLIN nets distributed in Tanintharyi and Rakhine by Bioassay Test on Anopheles mosquitoes, Year 4.

Brand name of LLINs	**No. of LLINs tested**	**Duration of used**	**Frequencies of washed**	**Bioassay results**
Net-Protect (Deltamethrine), DAWA Plus20 TANA (Deltamethrine), Perma Net2.0 (Deltamethrine), Yorkool (Deltamethrine), Power Net BASF (China), Power Net BASF (Thailand)	28	0 -12 months (one net received in 2013, but not yet used)	0 – 1 time	100% mortality (within 24 hours)
Power Net BASF (Thai)	1	13 – 17 months	0 – 1 time	100% mortality
Intercepter (Alpha-cypermethrin)	7	13 – 17 months	0 - 1 time	26.7% - 56% mortality

4.4 IR4: Malaria control services for mobile populations strengthened through interagency and inter-country collaboration.

4.4.1 Enabling environment strengthened

4.4.1.1 Country level support and coordination to increase cross border twin-city collaboration

Kawthoung-Ranong Twin-Cities working group has been active since Year 2. The efforts had improved relations between the local health offices where counterparts shared monthly information and conducted joint activities such as mapping of health facilities, joint training of staff of outbreaks and responses, joint malaria day, and working mechanism for cross-border patient referral. In Year 4, the working group was translated down to the local levels with cross-border VMW network. The idea is that these VMWs at border villages will serve as linkages between border communities and health officers on both sides. Activities summary are mentioned in the Table 22.

Table 23. Cross Border Collaboration activities in Year 4

Date / Place	Main activity	Attendants	Discussion points
Dec 5, 2014	2nd VMWs cross-border meeting & joint malaria outreach activity	16 VMWs from border villages in Kawthoung and Ranong province.	• Updated contact information between pairs of cross-border VMWs • Agreed on format for sharing malaria information between cross-border VMWs • Conducted malaria outreach activities languages during the boat racing festival to Thai and Burmese participants • Distributed over 300 malaria pamphlets.
Dec 11-12, 2014 Andaman Club, Kawthoung	ARC International Coordination Meeting	10 from Kawthoung, 10 from Ranong. NGOs from ARC, WVI, RAI, UNOPS, CPI, MMA, KDHW, Mon National Health Committee, CAP-M/URC.	• Shared experiences on successes and constraints on strategy for resistant *Pf* by GF-RAI/Burma implementing partners; • Shared information about geographical coverage gap and high-traffic hubs and routes, and remote worksites along border • All IPs analyzed gaps for unofficial border crossing for possible screening points.
Jan 29, 2015 Lone Phaw Village, Kawthoung	3rd VMWs cross-border network meeting		• Paired buddy VMW groups shared information on malaria and other health related information in their villages.
April 7, 2015	Cross border patient referral between cross border twin-cities.		• One TB patient (Burmese migrant worker) was referred from Ranong Hospital to Kawthoung Hospital through mechanism set up by the working group with facilitation form CAP-Malaria. Patient arrived to Kawthoung hospital and received anti-TB treatment.
May 20-22, 2015, Ranong	Training on Surveillance and Rapid Responses, and Twin-cities Meeting	12 government staffs from Burma, 2 WHO/Burma Field Coordinator and CAP-Malaria	• Training supported by TICA • Discussed progress on 3 diseases (HIV, TB and Malaria) cross-border collaborations

Date / Place	Main activity	Attendants	Discussion points
			• Training of how to do contact tracing during an outbreak of Ebola virus disease.
June 8-9. 2015, Ranong	Cross Border VMWs Network Training	Total 57 VMWs from both Kawthoung and Ranong participated as trainees. Integrate VMWs in other health diseases.	• Training supported by TICA • NMCP staffs, Team leaders from Kawthoung and Bokpyin. • CAP-Malaria and ARC also joined and facilitated the training. • CAP-Malaria assisted in the production of training materials on topics covering Malaria, TB, HIV, Dengue Hemorrhagic Fever and Diarrhea.
Aug 10-11, 2015 Pakayan Public Health Office, Kraburi, and XXX villages	Cross border VMWs Network training & joint outreach	14 VMWs from Kawthoung and Kraburi; VBDC Kawthoung supervisor; Thai health staff from HPHs and VBDU CAP-M staffs ~100 Residents of Wai Dang village, Kawthoung Burma ~100 migrants in Ban Had Tun village, Kraburi	• VMWs updated contact information and discussed on malaria situation in their villages. • Revised map of cross border buddy VMW. • Cross-border outreach for residents from XX villages and Burmese migrants working in XX, Kraburi. activities were conducted (malaria testing, HE, 1st Aid Kits were distributed)
Sep 4, 2015, Victoria Cliff Hotel, Kawthoung	Twin-cities working group meeting	32 health officials from Kawthoung Medical Office and Tanintharyi Department of Health, and Ranong PHO. CAP –Malaria WVI/Thailand, ARC/Burma.	• Focused on 3 diseases (Malaria, TB and HIV) as meeting supported by CAP-Malaria, GF-or RAI, GF-TB/Burma • Cross border patients referral system has been successful, mainly on TB patients. • CAP-Malaria to assist with integrating counselling component into training module • VBDC/Burma plan to conduct IRS for 1,000 HH along the borders. Plan to engage activities around the same time on both sides in FY2015.

Photo 36: Mobile dual language Health Education with loud speakers

Photo 37: Asking sample malaria knowledge questions to villagers

Photo 38: Malaria health education pamphlet distribution

Photo 39: Cross border VMW network meeting

4.4.1.2 Support to CBOs to increase detection of malaria cases

Supporting commodities to Back Pack Health Work Team and Pact Myanmar Project.

Commodities supported to BPHWT	Quantity
ACT(4x6)	3490
ACT(3x6)	119
ACT(2x6)	920
ACT(1x6)	920
Chloroquine(150mg)	45000
Primaquine (15mg)	75000
Bioline RDT	36750

CAP-M Burma Field Operation Director conducted training on diagnostic, case finding and management with emphasis on drug resistant Pf malaria for Back Pack Health Work Team (BPHWT). Training was conducted at Maesot, Thailand side on February 26, 2015. Total 86 BPHWT volunteers including 43 Male and 43 Female from Rakhine, Chin, Mon, Kayah, Shan, Kayin, Tanintharyi and Bago States and Regions. CAP-M Team also provide commodities to BPHWT. (see Table 12, to the left).

5 SUCCESS STORY

Success Stories/Lessons Learned Template

One Story Per Template

Instructions: Provide the information requested below. *Don't forget pictures*.

*** Program Element:**
* **Key Issues:**

Title: CAP-Malaria, Myanmar

Operating Unit: CAP-Malaria, Tanintharyi Team, Tanintharyi region, Myanmar

Please provide the following data:

***Headline (Maximum 300 characters):** A good headline or title is simple, jargon free, and has impact; it summarizes the story in a nutshell; include action verbs that bring the story to life.

Responding to malaria outbreak in Kyein Chaung village

***Body Copy (maximum 5,000 characters):** The first paragraphs should showcase the challenge encountered and the context of the foreign assistance program. Presenting a conflict or sharing a first person account are two good ways to grab the reader's attention. Continue by describing what actions were taken and finally describing the end result. What changed for the person or community? What was learned? How did this make a difference in the community or to the country overall? If this story is relating to a "best practice", what were the innovations in planning, implementation or partnering that made it different? If this story is about an evaluation, what program adjustments were made?

Responding to a malaria outbreak in Kyein Chaung village

Kyein Chaung village is situated near the forest fringe area in Thanintharyi township in Eastern Burma, close to the border with Thailand. The residence of 438 people are mostly ethnic Kayin (Karen). Due to the lack of proper road condition, the village is relatively cut off from other

communities. A trip to the nearest health facilities, Phyu sub-center, is a good a day walk on hilly terrain. The village is also located near the Lead Mine, a development project controlled by the Karen National Union (KNU).

When CAP-Malaria reached the village of Kyein Chaung in the year 2013, after a 5-hour ride on a motorbike from the nearest Tanintharyi town, we met with the community leaders including Ms. Thae Ei Phyu who volunteered to become a VMW (village malaria worker). In the first year that Thae Ei Phyu volunteered as VMWs, she helped distributed LLIN, provided malaria testing, and treated 34 people with malaria in her community.

In March 2015, CAP-Malaria team visited Kyein Chaung village to conduct malaria screening of suspected patients or those recently travel overnight in the forest, as the team noticed a small increase in the number of malaria cases compared to previous years. CAP-Malaria malaria mobile team identified and treated 9 people were found to be positive and treated on this single trip.

At the end of the malaria mobile clinic, CAP-Malaria team discussed with Thae Ei Phyu to be more active as the number of malaria cases in her community may be high this year, and took preemptive actions by topping up the community with additional 241 LLINs to improve net coverage and supplying her with additional stock of RDTs and ACTs. CAP-Malaria team also emphasized to Thae Ei Phyu the importance of making sure patients take their complete doses of malaria treatment. Indeed, Thae Ei Phyu was more active in April 2015 when she tested 136 people. Despite the additional preventive measures, Thae Ei Phyu diagnosed and treated 34 malaria cases (32 *Pf*, 2 *Pv*) in April 2015 alone. When one of the people she diagnosed and treated was the U Zin Yay Wa Ta, the respected religious and community leader, who had no history of travelling outside of the village, Thae Ei Phyu was very concerned.

After receiving an update from Thae Ei Phyu, CAP-Malaria alerted the Township Medical Officer, as well as CAP-Malaria Yangon headquarter. CAP-Malaria mobile team, in coordination with Township Medical Officer, quickly mobilized to Kyein Chaung village to conduct outbreak investigation and implemented intensify case-finding activity. The team tested 313 people and treated 11 additional cases (9 *Pf*, 2 *Pv*). CAP-Malaria team provided health talk sessions, emphasizing prevention, early diagnosis, and the need to comply with malaria treatment.

So what happened in Kayein Chaung village? Residents of Kayein Chaung village, particularly male residents, goes to forest fringe area and stay one or two weeks in forest for farming. Residents also regularly watch TV outdoor from 6-8pm because it is too hot and cramp inside the house. However, these typical behaviors are not likely the only contribution to the outbreak in Kayein Chaung village. This is because the cases recorded during the outbreak also included higher proportion of children, where prior months there were higher proportion of adult male among the malaria cases in the village. The area experienced unexpected rainfall in March and April which likely had an impact on mosquito population in the village, and this is likely the critical factor contributing the outbreak. What happened in Kayein Chaung may unavoidable as the weather and environmental conditions likely played a significant role in the outbreaks. However, the preemptive efforts by the team and Thae Ei Phyu allowed them to detect and respond to outbreak and resolved the situation in timely manner. CAP-Malaria closely followed the situations, and one case was identified in June.

One of the lesson learned is that malaria transmission can be very focal and likely require micro-epidemiology information and local actions. The team also contributed the successes of bringing down malaria cases quickly not only to early diagnosis and treatment, but also to directly observed therapy in making sure that patients have successful outcomes and further reducing changes of malaria transmission in the community.

***Pullout Quote (Optional, 1,000 characters):** Please provide a quote that represents and summarizes the story.

"The team (CAP-Malaria) told me to be more active as I may see more cases, but I was still shocked when I found so many people in my community had malaria. I've never seen that before and I was worried about dying my community dying. The (CAP-Malaria) team really encouraged me and calmed me down. The team gave me the drug supplies and they came to my village so quickly. Thank you so much for coming to help our village so fast." – Thae Ei Phyu, VMW, Kyein Chaung village, Tanintharyi Township, Burma

"I've seen people died from malaria here (in this village). I've seen their family cried. I've prayed for their souls. The community appreciated Thae Ei Phyu and the (CAP-Malaria) team for coming to find the sick and cured them. They cured me (from malaria) and I can continued to lead the community in prayers" – U Zin Yay Wa, 50-year old bhuddist monk, Kayein Chaung village, Tanintharyi township, Burma.

"When I received monthly report from Thae Ei Phyu (VMW from Kyein Chaung village), I noticed a few cases in February compared to previous months. We scheduled mobile team visit and discovered 9 cases on that single trip, more than a quarter of caseload from last year. So we distributed extra LLINs to the community and gave Thae Ei Phyu with extra supplies (RDTs and ACTs). We are proud of Thae Ei Phyu, she really stepped-up to serve her community. She made sure people took their medicines and helped save a lot of people. - Dr. Zwe Thu Htun, Team Leader, CAP-Malaria/Burma-URC

***Background Information (3,000 characters):** Please provide whether this story is about a presidential initiative, Key Issue(s), where it occurred (city or region of country) and under what item(s) (Objectives, Program Areas, Program Elements) in the foreign assistance Standardized Program Structure. Include as many as appropriate.

Example of local (village) surveillance and rapid responses to malaria outbreak. CAP-Malaria Tanintharyi team and VMW analyze local malaria trend and was able to detect local outbreak early and were able to respond timely.

***Contact Information (300 characters):** Please list the name of the person submitting along with their contact information (email and phone number).

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- U Zin Yay Wa Ta, Buddhist monk and religious leader, Kyein Chaung village, Tanintharyi, Burma

Figure 40-41: CAP-Malaria mobile team on their way to Kyein Chaung. Photo: CAP-Malaria, Tanintharyi township, Burma, May 2015

Mobile team conducting case finding activities in responses to outbreak. Photo: CAP-Malaria, Kyein Chaung village, Tanintharyi township, Burma, May 2015	Case finding activities in responses to outbreak continued through the night as residents returned home from a long day work. Photo: CAP-Malaria, Kyein Chaung village, Tanintharyi township, Burma, May 2015

Thae Ei Phyu, CAP-Malaria trained VMWs observing U Zin Yay Wa Ta, a respected Buddhist monk in her village taking his medicines for treatment of P. falciparum malaria. Photo: CAP-Malaria, Kyein Chaung village, Tanintharyi township, Burma, May 2015	Dr. Zwe Thu Htun, Team Leader, CAP-Malaria Burma, (to the right) explaining about malaria medicine to a young mother. Thae Ei Phyu (to the left) giving the young patient a cup of water after taking his first dose of medication. He was diagnosed with P. vivax infection. Photo: CAP-Malaria, Kyein Chaung village, Tanintharyi township, Burma, May 2015

6 PERFORMANCE INDICATORS FOR CAP-MALARIA, YEAR 4

Performance Indicator	Year 4		
	Annual Target	Annual Result	% Achieved
IR1: use of preventive measures increased among population at risk in CAP-Malaria target areas			
OP1F Number of ITNs purchased by other partners that were distributed with USG funds	NA	NA	NA
OP2F Number of ITNs purchased in any fiscal years with USG funds that were distributed in this reported fiscal year	**150,000**	**400,342**	266.89%
Through campaign (project teams and other special events such as WMD)	NA	385,025	NA
Through health facility (e.g. ANC screening)	NA	3,683	NA
Through the private commercial sector (LLIN lending scheme & distribution in worksites)	NA	11,634	NA
OP3 Number of nets impregnated with USG support	**33,000**	**15,383**	46.62%
IR2 Use of quality malaria diagnostics and appropriate treatment increased among malaria patients in CAP-Malaria target areas			
OP4F Number of health workers trained in case management with artemisinin-based combination therapy (ACTs) with USG funds	**850**	**1,254**	**147.53%**
Male	NA	328	NA
Female	NA	926	NA
Number of health facility workers trained	300	682	227.33%
Number of community-level workers trained	420	550	130.95%
Number of private providers trained	130	22	16.92%
OP5F Number of health workers trained in malaria laboratory diagnostics (rapid diagnostic tests (RDTs) or microscopy) with USG funds	**880**	**1,297**	**147.39%**
Male	NA	355	NA
Female	NA	942	NA
Number of health facility workers trained	330	725	219.70%
Number of community-level workers trained	420	550	130.95%
Number of private providers trained	130	22	16.92%

Performance Indicator	Year 4		
	Annual Target	Annual Result	% Achieved
OP6F Number of artemisinin-based combination therapy (ACT) treatments purchased by other partners that were distributed with USG funds	NA	NA	NA
OP7F Number of artemisinin-based combination therapy (ACT) treatments purchased in any fiscal year with USG	NA	**21,450**	NA
OP7F b. Number of artemisinin-based combination therapy (ACT) treatments purchased with USG fund that were distributed in any fiscal year	NA	**15,660**	**NA**
OP8F a. Number of RDTs purchased in any fiscal year with USG funds in this reported fiscal year	NA	**200,000**	**NA**
OP8F Number of RDTs purchased in any fiscal year with USG funds that were distributed to health facilities in this reported fiscal year	**250,000**	**264,775**	**105.91%**
OP9 Number of malaria tests performed	**250,000**	**230,317**	**92.13%**
Disaggregated by Age			
Age < 5	NA	30,593	NA
Age => 5	NA	199,724	NA
Disaggregated by Sex			
Male	NA	111,781	NA
Female	NA	118,536	NA
Disaggregated by Pregnancy status (Reproductive aged female only 15 - 49 years)			
Pregnant	NA	1,382	NA
Not pregnant	NA	52,467	NA
Disaggregated by provider			
Reported by Health facility	N/A	N/A	N/A
Reported by VMW	NA	88,710	NA
Reported by CAP-Malaria staffs (mobile clinic & screening points)	NA	121,794	NA
Reported by Private Providers	NA	19,813	NA

Performance Indicator	Year 4		
	Annual Target	Annual Result	% Achieved
OP10 Number of positive tests	**10,000**	**7,843**	**78.43%**
Disaggregated by Age			
Age < 5	NA	1,507	NA
Age => 5	NA	6,336	NA
Disaggregated by Sex			
Male	NA	4,737	NA
Female	NA	3,106	NA
Disaggregated by Pregnancy status (Reproductive aged female only 15 - 49 years)			
Pregnant	NA	83	NA
Not pregnant	NA	1,078	NA
By species			
Number of *Pf* cases	NA	5,086	NA
Number of *Pv* cases	NA	2,584	NA
Number of *Pmix* cases	NA	173	NA
Disaggregated by provider			
Reported by Health facility	N/A	N/A	N/A
Reported by VMW	NA	4,321	NA
Reported by CAP-Malaria staff (mobile clinic & screening points)	NA	2,603	NA
Reported by Private Providers	NA	919	NA
OP11 Number malaria cases treated	**NA**	**7,792**	**NA**
Disaggregated by Age			
Age < 5	NA	1,485	NA
Age => 5	NA	6,307	NA
Disaggregated by Sex			
Male	NA	4,711	NA
Female	NA	3,081	NA

Performance Indicator	Year 4		
	Annual Target	Annual Result	% Achieved
Disaggregated by provider			
Reported by Health facility	N/A	N/A	N/A
Reported by VMW	NA	4,282	NA
CAP-Malaria staff (mobile clinic & screening points)	NA	2,592	NA
Reported by Private Providers	NA	918	NA
Other project performance indicators			
IR1: use of preventive measures increased among population at risk in CAP-Malaria target areas			
OP12 % of migrant worker having ITN	NA	NA	NA
Number of migrants having ITN			
Number of migrants interviewed			
OP13 % of households having ITN	NA	NA	NA
Number of households having ITN			
Number of households interviewed			
OP14 Number of individuals reached with BCC messages through interpersonal communication (IPC) in CAP-M target areas	**250,000**	**184,944**	**73.98%**
Male	NA	89,077	NA
Female	NA	95,867	NA
IR2 Use of quality malaria diagnostics and appropriate treatment increased among malaria patients in CAP-Malaria target areas			
OP16 % of Pf cases followed up	90%	95%	105.49%
Number of *Pf* cases followed up		413	
Number of *Pf* cases enrolled		435	
OP18 % of Pf patients receiving complete DOTs	100%	97%	97.31%
Number of Pf patients receiving DOTs		1,517	
Number of Pf patients enrolled		1,559	

Performance Indicator	Year 4		
	Annual Target	Annual Result	% Achieved
OP19 Number of health facilities with microscopy QA system in place	14	9	64.29%
Outcome indicators			
IR1: use of preventive measures increased among population at risk in CAP-Malaria target areas			
OC1 % of residents in CAP-M targeted areas who slept under an ITN the previous night	**80%**	**NA**	**NA**
Number of residents in CAP-Malaria targeted areas who slept under an ITN the previous night			
Number of residents interviewed			
OC2 % of migrants in CAP-Malaria targeted areas who slept under an ITN the previous night	**NA**	**NA**	**NA**
Number of migrants in CAP-Malaria targeted areas who slept under an ITN the previous night			
Number of migrants/migrant workers interviewed			
IR2: Use of quality malaria diagnostics and appropriate treatment increased among malaria patients in CAP-Malaria target areas			
OC3 % of uncomplicated malaria cases treated according to national malaria treatment guideline in CAP-Malaria target areas	**100%**	**99.69%**	**99.69%**
Number of uncomplicated malaria cases treated according to national malaria treatment guideline in CAP-Malaria target areas		7,768	
Number of uncomplicated malaria cases treated		7,792	
OC4 % of service delivery points experiencing stock out of ACT	**4%**	**NA**	**NA**
Number of service delivery points experiencing stock out of ACT		-	
Number of service delivery points visited		-	
Impact indicators			
IP1 Rate of confirmed malaria cases per 1,000 population	7	9.04	129.19%
Number of confirmed cases		7,843	
Population		**867,248**	

7 ANNEX 1 – LLIN DISTRIBUTION BY TOWNSHIPS, IN YEAR 4

Township	FY 4 (from October 2014 to September 2015)				
	Distribution in villages	Distribution in Work places	ANC	Other*	FY4 Total
Bokepyin	3,288	1,635		-	4,923
Dawei	7,934	103		-	8,037
Kawthaung	690	3,742	119	-	4,551
Kyunsu	7,455	1,245		-	8,700
Laung lone	188	-	467	-	655
Myeik	2,032	1,185		-	3,217
Palaw	3,573	178		-	3,751
Tanintharyi	3,938	655		-	4,593
Thayetchaung	3,990	169	443	-	4,602
Yephyu	4,262	1,097		-	5,359
Tanintharyi Total	**37,350**	**10,009**	**1,029**	**-**	**48,388**
Ann	41,746	-		1,300	43,046
Gwa	150	-		300	450
Kyaukpyu	-	-	1,059	1,500	2,559
Manaung	-	-		-	-
Ramree	178	-		-	178
Thandwe	931	-	353	700	1,984
Toungup	-	-		700	700
Kyauktaw				5,000	5,000
Minbyar				7,500	7,500
Mraukoo				7,500	7,500
Rakhine Total	**43,005**	**-**	**1,412**	**24,500**	**68,917**
Kyauktaga	5,576	-		-	5,576
Nyaunglebin	2,437	-		-	2,437
Yedashe	5,593	-		-	5,593
Bago Total	**13,606**	**-**	**-**	**-**	**13,606**
Hpaan	202	374	588	3	1,167
Hlaingbwe	2,950	520	573	46	4,089
Kawkareik	672	355		348	1,375
Myawaddy	6,164	21		33	6,218
Kayin Total	**9,988**	**1,270**	**1,161**	**430**	**12,849**
Bawlakhe	703	65		2,705	3,473
Demoso	-	-		65	65
Loikaw	-	290		484	774
Kayah Total	**703**	**355**	**-**	**3,254**	**4,312**
Kyarinseikkyi	2,257	-	-	-	2,257
Gwa (MNMA)	1,578	-	81	-	1,659
Hpa-pun (CDA)	928	-	-	-	928
Thandaung	1,353	-	-	-	1,353
Sub-grants Total	**6,116**	**-**	**81**	**-**	**6,197**
BPHW Team	**-**	**-**	**-**	**32,800**	**32,800**
Grand Total	**110,768**	**11,634**	**3,683**	**60,984**	**187,069**

**Others include donation to government per request or in responses to natural disasters, and distribution to positive patients, and distribution during training and special malaria outreach such as malaria day.*

8 ANNEX 2 – CASE FUNDING ACTIVITIES BY TOWNSHIPS, YEAR 4

Case finding by CAP-Malaria mobile team, Oct 2014 – Sep 2015

No	Township	*Tested*	*Positive*	*Pf*	*Pv*	*Pfmix*	*Pm*	*MPR%*
1	*Bokpyin*	*7350*	*63*	*24*	*39*	*0*	*0*	*0.86%*
2	*Dawei*	*2666*	*38*	*8*	*28*	*2*	*0*	*1.43%*
3	*Kawthoung*	*6040*	*43*	*24*	*17*	*2*	*0*	*0.71%*
4	*Kyunsu*	*10026*	*124*	*91*	*32*	*1*	*0*	*1.24%*
5	*Launglon*	*615*	*1*	*0*	*1*	*0*	*0*	*0.16%*
6	*Myeik*	*7985*	*151*	*112*	*37*	*2*	*0*	*1.89%*
7	*Palaw*	*7608*	*77*	*39*	*35*	*3*	*0*	*1.01%*
8	*Tanintharyi*	*8450*	*84*	*35*	*47*	*2*	*0*	*0.99%*
9	*Thayetchaung*	*2328*	*15*	*10*	*4*	*1*	*0*	*0.64%*
10	*Yebyu*	*1962*	*6*	*0*	*6*	*0*	*0*	*0.31%*
Tanintharyi Total		***55030***	***602***	***343***	***246***	***13***	***0***	***1.09%***
1	*Ann*	*21242*	*1627*	*1471*	*116*	*40*	*0*	*7.66%*
2	*Gwa*	*1619*	*24*	*19*	*4*	*1*	*0*	*1.48%*
3	*Kyuakpyu*	*1687*	*1*	*1*	*0*	*0*	*0*	*0.06%*
4	*Munaung*	*1403*	*0*	*0*	*0*	*0*	*0*	*0.00%*
5	*Ramree*	*3283*	*20*	*6*	*13*	*1*	*0*	*0.61%*
6	*Thandwe*	*3279*	*150*	*133*	*14*	*3*	*0*	*4.57%*
7	*Toungup*	*2135*	*27*	*23*	*4*	*0*	*0*	*1.26%*
Rakhine Total		***34648***	***1849***	***1653***	***151***	***45***	***0***	***5.34%***
1	Kyauktaga	*1659*	*0*	*0*	*0*	*0*	*0*	*0.00%*
2	Nyaunglebin	*1192*	*0*	*0*	*0*	*0*	*0*	*0.00%*
3	Yedashe	*1337*	*1*	*0*	*1*	*0*	*0*	*0.07%*
Bago Total		***4188***	***1***	***0***	***1***	***0***	***0***	***0.02%***
URC Total		***93866***	***2452***	***1996***	***398***	***58***	***0***	***2.61%***
1	Hlaingbwe	*6464*	*43*	*21*	*19*	*3*	*0*	*0.67%*
2	Hpa-an	*5182*	*2*	*1*	*1*	*0*	*0*	*0.04%*
3	Kawkareik	*6871*	*5*	*1*	*4*	*0*	*0*	*0.07%*
4	Myawaddy	*6016*	*26*	*3*	*22*	*1*	*0*	*0.43%*
SCI (Kayin) Total		***24533***	***76***	***26***	***46***	***4***	***0***	***0.31%***
1	Bawlakhe	*582*	*10*	*6*	*4*	*0*	*0*	*1.72%*
2	Demoso	*798*	*1*	*0*	*1*	*0*	*0*	*0.13%*
3	Loikaw	*683*	*0*	*0*	*0*	*0*	*0*	*0.00%*
SCI (Kayah) Total		***2063***	***11***	***6***	***5***	***0***	***0***	***0.53%***
SCI Total		***26596***	***87***	***32***	***51***	***4***	***0***	***0.33%***
CAP-M Mobile Total		***120462***	***2539***	***2028***	***449***	***62***	***0***	***2.11%***

Case finding by CAP-Malaria VMWs, Oct 2014 – Sep 2015

No	Township	Tested	Positive	*Pf*	*Pv*	*Pfmix*	Pm	MPR%
1	*Bokpyin*	*2633*	*83*	*8*	*75*	*0*	*0*	*3.15%*
2	*Dawei*	*3338*	*510*	*134*	*369*	*7*	*0*	*15.28%*
3	*Kawthoung*	*3378*	*151*	*35*	*115*	*1*	*0*	*4.47%*
4	*Kyunsu*	*2554*	*120*	*80*	*37*	*3*	*0*	*4.70%*
5	*Launglon*	*497*	*4*	*2*	*2*	*0*	*0*	*0.80%*
6	*Myeik*	*1366*	*12*	*0*	*12*	*0*	*0*	*0.88%*
7	*Palaw*	*2685*	*176*	*102*	*71*	*3*	*0*	*6.55%*
8	*Tanintharyi*	*3934*	*144*	*84*	*56*	*4*	*0*	*3.66%*
9	*Thayetchaung*	*1254*	*71*	*58*	*12*	*1*	*0*	*5.66%*
10	*Yebyu*	*420*	*29*	*8*	*21*	*0*	*0*	*6.90%*
Tanintharyi Total		***22059***	***1300***	***511***	***770***	***19***	***0***	***5.89%***

No	Township	Tested	Positive	*Pf*	*Pv*	*Pfmix*	Pm	MPR%
1	*Ann*	*5017*	*860*	*781*	*63*	*16*	*0*	*17.14%*
2	*Gwa*	*2855*	*134*	*98*	*31*	*5*	*0*	*4.69%*
3	*Kyuakpyu*	*5224*	*11*	*5*	*6*	*0*	*0*	*0.21%*
4	*Munaung*	*2648*	*2*	*1*	*1*	*0*	*0*	*0.08%*
5	*Ramree*	*4199*	*26*	*10*	*16*	*0*	*0*	*0.62%*
6	*Thandwe*	*3500*	*253*	*223*	*27*	*3*	*0*	*7.23%*
7	*Toungup*	*3485*	*128*	*115*	*13*	*0*	*0*	*3.67%*
Rakhine Total		***26928***	***1414***	***1233***	***157***	***24***	***0***	***5.25%***
1	*Kyauktaga*	*1664*	*16*	*7*	*8*	*1*	*0*	*0.96%*
2	*Nyaunglebin*	*1490*	*19*	*9*	*9*	*1*	*0*	*1.27%*
3	*Yedashe*	*2012*	*20*	*8*	*12*	*0*	*0*	*0.99%*
Bago Total		***5166***	***55***	***24***	***29***	***2***	***0***	***1.06%***
1	*Gwa (MNMA)*	*3873*	*120*	*73*	*46*	*1*	*0*	*3.10%*
2	*Hpapun (CDA)*	*6527*	*275*	*171*	*101*	*3*	*0*	*4.21%*
3	*Kyainseikgyi*	*3261*	*379*	*235*	*110*	*34*	*0*	*11.62%*
4	*DEAR*	*678*	*2*	*1*	*1*	*0*	*0*	*0.29%*
Sub-grants Total		***14339***	***776***	***480***	***258***	***38***	***0***	***5.41%***
URC Total		***68492***	***3545***	***2248***	***1214***	***83***	***0***	***5.18%***
1	*Hlaingbwe*	*7065*	*426*	*187*	*236*	*3*	*0*	*6.03%*
2	*Hpa-an*	*4694*	*32*	*11*	*21*	*0*	*0*	*0.68%*
3	*Kawkareik*	*3522*	*70*	*8*	*62*	*0*	*0*	*1.99%*
4	*Myawaddy*	*2771*	*219*	*22*	*194*	*3*	*0*	*7.90%*
SCI (Kayin) Total		***18052***	***747***	***228***	***513***	***6***	***0***	***4.14%***
1	*Bawlakhe*	*197*	*13*	*6*	*7*	*0*	*0*	*6.60%*
2	*Demoso*	*1733*	*15*	*4*	*11*	*0*	*0*	*0.87%*
3	*Loikaw*	*236*	*1*	*0*	*1*	*0*	*0*	*0.42%*
SCI (Kayah) Total		***2166***	***29***	***10***	***19***	***0***	***0***	***1.34%***
SCI Total		***20218***	***776***	***238***	***532***	***6***	***0***	***3.84%***
CAP-Malaria VMW		***88710***	***4321***	***2486***	***1746***	***89***	***0***	***4.87%***

Case finding by CAP-Malaria through PPs, Oct 2014 – Sep 2015

No	*Township*	*Tested*	*Total*	*Pf*	*Pv*	*Pfmix*	*Pm*	*MPR%*
1	*Bokpyin*	*705*	*49*	*8*	*41*	*0*	*0*	*6.95%*
2	*Dawei*	*181*	*11*	*2*	*9*	*0*	*0*	*6.08%*
3	*Kawthoung*	*1143*	*53*	*4*	*49*	*0*	*0*	*4.64%*
4	*Kyunsu*	*2015*	*57*	*32*	*25*	*0*	*0*	*2.83%*
5	*Launglon*	*0*	*0*	*0*	*0*	*0*	*0*	-
6	*Myeik*	*1327*	*22*	*9*	*13*	*0*	*0*	*1.66%*
7	*Palaw*	*949*	*71*	*14*	*57*	*0*	*0*	*7.48%*
8	*Tanintharyi*	*1974*	*115*	*47*	*56*	*12*	*0*	*5.83%*
9	*Thayetchaung*	*551*	*32*	*22*	*9*	*1*	*0*	*5.81%*
10	*Yebyu*	*0*	*0*	*0*	*0*	*0*	*0*	-
Tanintharyi Total		***8845***	***410***	***138***	***259***	***13***	***0***	***4.64%***
1	*Ann*	*1891*	*355*	*328*	*23*	*4*	*0*	*18.77%*
2	*Gwa*	*406*	*30*	*24*	*5*	*1*	*0*	*7.39%*
3	*Kyuakpyu*	*4816*	*0*	*0*	*0*	*0*	*0*	*0.00%*
4	*Munaung*	*0*	*0*	*0*	*0*	*0*	*0*	-
5	*Ramree*	*158*	*5*	*2*	*3*	*0*	*0*	*3.16%*
6	*Thandwe*	*160*	*1*	*1*	*0*	*0*	*0*	*0.63%*
7	*Toungup*	*1164*	*46*	*44*	*2*	*0*	*0*	*3.95%*
Rakhine Total		***8595***	***437***	***399***	***33***	***5***	***0***	***5.08%***
URC Total		***17440***	***847***	***537***	***292***	***18***	***0***	***4.86%***
1	*Hlaingbwe*	*613*	*31*	*22*	*6*	*3*	*0*	*5.06%*
2	*Hpa-an*	*522*	*13*	*1*	*12*	*0*	*0*	*2.49%*
3	*Kawkareik*	*255*	*2*	*1*	*1*	*0*	*0*	*0.78%*

No	Township	Tested	Total	Pf	Pv	Pfmix	Pm	MPR%
4	Myawaddy	901	26	4	22	0	0	2.89%
SCI (Kayin) Total		**2291**	**72**	**28**	**41**	**3**	**0**	**3.14%**
1	Bawlakhe	0	0	0	0	0	0	-
2	Demoso	0	0	0	0	0	0	-
3	Loikaw	82	0	0	0	0	0	0.00%
SCI (Kayah) Total		**82**	**0**	**0**	**0**	**0**	**0**	**0.00%**
SCI Total		**2373**	**72**	**28**	**41**	**3**	**0**	**3.03%**
CAP-M PP Total		**19813**	**919**	**565**	**333**	**21**	**0**	**4.64%**

Note: there are no PP activities in Bago East Region.

Case finding by CAP-Malaria screening points and fixed clinics, Oct 2014 – Sep 2015

No	Township	Tested	Positive	Pf	Pv	Pfmix	Pm	MPR%
1	Bokpyin	166	15	3	12	0	0	9.04%
2	Kawthoung	639	3	1	1	1	0	0.47%
3	Hlaingbwe	67	8	0	8	0	0	11.94%
4	Hpa-an	160	2	0	2	0	0	1.25%
5	Kawkareik	21	0	0	0	0	0	0.00%
6	Myawaddy	173	35	3	32	0	0	20.23%
7	Loikaw	106	1	0	1	0	0	0.94%
CAP-Malaria SP Total		**1332**	**64**	**7**	**56**	**1**	**0**	**4.80%**

Note: Screening points are set-up at bus gates, jetty and Yuzana Palm Oil Production Factory in Tanintharyi Region and Stationary Clinics at the Kayin State. The aim of screening point is to limit the potential spread of drug resistant Pf from Tier 1 to other areas. Results show that MPR among migrants are quite high in some townships. In Myawaddy, these fixed clinics are located near the border areas.

9 ANNEX 3 – MALARIA SITUATION IN VILLAGES UNDER DALETT RHC AFTER ICF

Sr. No.	Village of Dalett RHC, Ann Township	October 2014			May 2015			Remarks
		Tested	Positive	MPR	Tested	Positive	MPR	
1	Ah Lai Kyun	165	11	6.67	133	1	0.75	Villages with reduced MPR
2	Ah Yoe Taung (Zayat Kwin)	54	11	20.37	65	9	13.85	
3	Ah Yoe Taung (Ann Pya)	42	9	21.43	75	7	9.33	
4	Chan Kone	101	14	13.86	100	5	5	
5	Eaing Wine	41	11	26.83	41	0	0	
6	Hlaing Wa	80	18	22.50	45	5	11.11	
7	Kan Latt	121	23	19.01	74	7	9.46	
8	Kaw Hlaw	52	18	34.62	13	1	7.69	
9	Kwan Wa	389	43	11.05	129	6	4.65	
10	Kyain Chaung	15	6	40.00	81	4	4.94	
11	Kyauk Gyi	64	13	20.31	59	6	10.17	
12	Lay Eain Su	79	21	26.58	63	2	3.17	
13	Mal Toung Chay	132	34	25.76	90	4	4.44	
14	Maung Na Ma	39	15	38.46	38	3	7.89	
15	Ngote	31	15	48.39	43	14	32.56	
16	Nhan Chaung	109	20	18.35	225	18	8	
17	Nyaung Chaung	148	66	44.59	165	37	22.42	
18	Pha Yone Chaung	41	10	24.39	35	2	5.71	
19	Phaung Taw	195	20	10.26	106	2	1.89	
20	Pharr Pyo	78	21	26.92	55	4	7.27	
21	Pine Phyar	94	33	35.11	64	3	4.69	
22	Sa Tone	143	25	17.48	75	4	5.33	
23	Tha Yet Pin Chaung	12	3	25.00	60	0	0	
24	Thinga Net Eaing	179	27	15.08	101	1	0.99	
25	Yar Pyin Wa	121	14	11.57	54	2	3.7	
26	Za Yat Kwin	151	9	5.96	255	1	0.39	
27	Zan Thie	135	29	21.48	49	7	14.29	
	27 Villages (Sub-total)	**2811**	**539**	**19.17**	**2293**	**155**	**6.76**	
28	Ann Pya	170	2	1.18	115	15	13.04	Villages with increased MPRs
29	Bway Wa	220	23	10.45	161	35	21.74	
30	Kha Maung Taw	68	6	8.82	69	7	10.14	
31	Kwa Son	84	5	5.95	98	12	12.24	
32	Lone Ton	63	19	30.16	64	40	62.5	
33	Nan Yar Kone	232	17	7.33	97	16	16.49	
34	Nay Pa Say	50	10	20.00	64	23	35.94	
35	Paung Wa	140	21	15.00	72	15	20.83	
36	Win Wa	100	12	12.00	78	15	19.23	
	9 Villages (Sub-total)	**1127**	**115**	**10.20**	**818**	**178**	**21.76**	
37	Tha Phan Pin Seik	**188**	**23**	**12.23**	**83**	**11**	**13.25**	No change in MPR
	Total	**4126**	**677**	**16.41**	**3194**	**344**	**10.77**	
38	Kwan Wa (1) data in	-	-	-	142	1	0.7	
	Grand Total	4126	677	16.41				

10 ANNEX 4 – ENTOMOLOGY SURVEYS, YEAR 4

Entomological survey in Htee-Hta Village, Dawei township, Project Year 4

Htee Hta village is 105 miles from Dawei Town proper. It is situated to the west of foothill area of Mel Ba Lar and Min Tha Mee mountain ranges and to the east of Tanintharyi River and Tanintharyi Mountain range. The village is stratified as high malaria endemic. Entomological surveys were carried out every 3 months and results are compiled in the following table.

Method	Month	Indoor	Outdoor
Human landing catches	October 14	2 *An. minimus* (0.05 per man hour) (11pm-1am); 1 *An. maculatus* (0.02 per man hour) (8pm-9pm)	6 *An. minimus* (0.16 per man hour) (9pm-11pm) (1am-2am)
	January 15	No Anopheles was caught.	12 *An. minimus* (0.16 per man hour) (6pm-7pm; 9pm-3am); 1 *An. maculatus* (0.01 per man hour)
	April 15	1 *An. minimus* (0.01 per man hour)	14 *An. minimus* (0.19 per man hour) (8pm-4am); 6 *An. maculatus* (0.08 per man hour) (7pm-10pm) (12am -1am)
	July 15	1 *An. maculatus* (0.0137 per man hour) (10pm-11pm)	19 *An. minimus* (0.26 per man hour) (6pm-4 am) 7 *An. maculatus* (0.09 per man hour) (7 pm to 12am)
CDC Light trap	October 14	No mosquito caught	No mosquito caught
	January 15	10 *An. minimus* (8pm-9pm)	4 *An. minimus* (8pm-9pm)
	April 15	34 *An. minimus* (6pm-9pm, 9pm-12am-peak 24 No., 12am-3 am)	10 *An. minimus* ((6pm-9pm, 9pm-12am peak 5 No., 12am-3 am); 1 *An. maculatus* (11 pm-12am)
	July 15	1 *An. minimus*, (6pm-9pm) , unfed; 1. *An. maculatus* (6pm-9pm), unfed	2. *An. minimus* (6pm-9pm), unfed, 1. *An. minimus* (9pm-12am), unfed 2. *An. maculatus* (6pm-9pm), unfed
Morning Indoor space spray	October 14	Nil	NOT RELEVANT
	January 15	Only *Culex* mosquito	
	April 15	Only *Culex* mosquito	
	July 15	2 *Culex* & 3 *Aedes aegypti*	
Animal bait net trap	October 14	NOT RELEVANT	7 Anopheles species; 4 *An. dirus* (9pm-1am), 9 *An. minimus* (8pm-3am), 5 *An. maculatus*, 7 *An. kochi*, 25 other 3 species
	January 15		62 *An. minimus* (6pm-4am), 40 *An. maculatus*, 28 *An. hyrcanus*, 18 other 3 species
	April 15		123 *An. minimus* (6pm-4am), 155 *An. maculatus* (6pm-4am), 49 *An. culicifacies* (6pm-4am), 15 *An. vagus* (6pm-11pm), 1 *An. kochi* (11pm-12am)
	July 15		9 *An. minimus* (7pm-1am, 2am-3am), 97 *An. maculatus* (7pm-3am), 18 *An. kochi* (7pm-12am, 3am-4am) , 1 *An. culicifacies* (11pm-1am)

Entomological survey in War Taw Village, Dawei Township, Project Year 4

War Taw village, Myitta sub-township, is situated at the foothill of Sin Phyu Tine mountain range. Sin Phyu Tine stream winds from the north to the south to the village. The topography and climatic condition favor malaria transmission throughout the year. During raining season, *An. dirus* take the role in transmission of malaria as they breed in places of small collection of water like wells or even tire tracks. During post monsoon, the slow running streams provide suitable breeding places for *An. minimus*. *An. dirus* density was relatively higher as compared to *An. minimus* in October. In January, *An. minimus* mosquitoes play the role in transmission.

Method	Month	Indoor	Outdoor
Human landing catches	October 14	6 An. dirus (0.17 per man hour) (8pm-9pm, 10pm-110m, 12am-1am, 3am-4am)	7An.dirus (0.19 per man hour), (6pm-12am)
	January 15	1 An. minimus (0.013 per man hour) (8pm-9pm)	8 An. minimus (0.11 per man hour) (6pm-8pm; 10pm-12am; 1 An. maculatus (0.013per man hour); (7pm-8pm)
	April 15	1 An. minimus (0.013 per man hour), (6pm-7 pm)	2 An. minimus(0.03per man hour) 1An.maculatus
	July 15	5.An.dirus (0.07 per man hour) (8pm-3am) 10. An. minimus(0.13 per man hour) (6pm-3am) 1 An. maculatus (0.013 per man hour) (1am-2am)	7An.dirus (0.1 per man hour) (6pm-12mid night); 83 An. minimus (1.26 per man hour) (6pm-4 am); 33 An. maculatus (0.5 per man hour) (6 pm to 2 am)
CDC Light trap	October 14	1An.dirus (8pm-9pm)	Not done
	January 15	3 An. minimus (9pm-102am-3am)pm)	1An.maculatus (8pm-9pm)
	April 15	14 An. minimus (8pm-9pm; 11pm-12am; 2am-3am); 10 An. maculatus (8pm-9pm; 11pm-12am; 2am-3am);	13 An. minimus (8pm-9pm, 11pm-12 midnight,2am-3am); 3 An. maculatus (8pm-9pm)
	July 15	5 An. minimus, (6pm-9pm) , unfed; 7 An. minimus, (9pm-12m) , 4 An. minimus, (12am-3am) , 4 unfed and with traces of previous fresh blood meal in 2 mosquitoes ; 1 An. maculatus (9pm-12am), All of above were freshly hatched	9. An. minimus (6pm-9pm), 8. An. minimus (9pm-12 am), 3 An. maculatus (6pm-9pm), 2 An. maculatus (9pm-12 am) All of above were unfed, freshly hatched
Morning Indoor space spray	October 14	4 Culex and 3 Aedes aegypti.	NOT RELEVANT
	January 15	Nil	
	April 15	Nil	
	July 15	5 Aedes aegypti	
Animal bait net trap	October 14	NOT RELEVANT	37 An. dirus (6pm-4am); 4 An. minimus (7pm-11pm) (2am-3am); 8 An. maculatus, (6pm-9pm) (11pm-12 midnight), (1am-2am); 7 An. kochi (6pm-8pm) (3am-4am)
	January 15		18 An. minimus(6pm-12 midnight) 14 An. maculatus (6pm-10pm)
	April 15		316 An. minimus (6pm-4am); 278 An. maculatus (6pm-4am)
	July 15		5 Anopheles (C) species; 1 Anopheles (A) species 4. An. dirus (7pm-11pm, 3am-4am) 281. An. minimus (6pm-4 am), 144. An. maculatus (6pm-4 am), 15 An. kochi (6pm-11pm, 1am-2am) ,

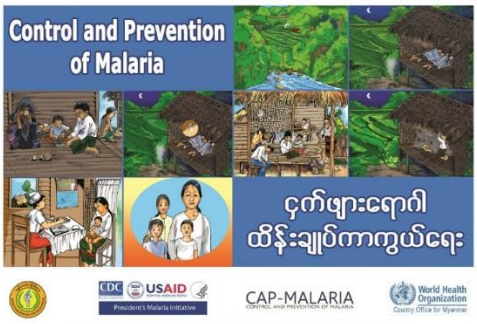
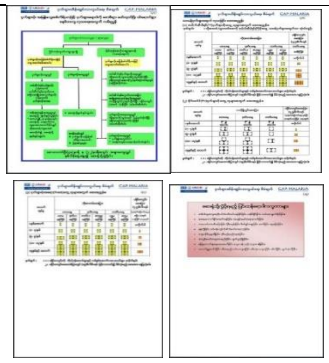
ELISA test positive results on sporozoites studies in Tanintharyi Region & Rakhine State, Year 4.

Period	Place/Area	Anopheles species	Method of collection	Sporozoite Positive
Oct-14	War Taw village, Dawei Township	*An. dirus*	Human landing out door collection	Pf sporozoites
	Pha Pyoke village, Thayetchaung Township	*An. annularis*	Animal bait net trapped collection	Pf sporozoites
Jan-15	War Taw village, Dawei Township	*An. minimus*	Animal bait net trapped collection	Pf sporozoites
Apr-15	Htee Hta village, Dawei township	*An. minimus*	Animal bait net trapped collection	Pv sporozoites
	Htee Hta village, Dawei township	*An. maculatus*	Animal bait net trapped collection	Pv sporozoites

Period	Place/Area	Anopheles species	Method of collection	Sporozoite Positive
	Htee Hta village, Dawei township	*An. vagus*	Animal bait net trapped collection	Pv sporozoites
Jun-15	Taung Pauk village, Toungup Township	*An. culicifacies*	Animal bait net trapped collection	Pf & Pv sporozoites

11 ANNEX 5 – EXAMPLE OF BCC MATERIALS

VMW BCC material

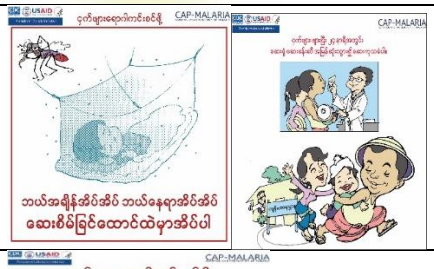
1		**Type of IEC material:** VMW Flip Chart **Objective :** To help VMWs provide HE **Key Message :** Provide HE on transmission, prevention, control, diagnosis and treatment **Target audience:** secondary audiences including service providers (VMWs, HF staff private providers) Number of production: 1,500 **Where to distribute:** At VMW training
2		**Type of IEC material:** VMW Job Aid **Objective :** To get proper instruction for volunteers to treat malaria **Key Message :** Easy instructions on case management, diagnosis and treatment for VMWs **Target audience:** secondary audiences including service providers (VMWs, HF staff private providers) **Number of production:** 1,485 **How to distribute:** At VMW training
3		**Type of IEC material:** VMW Watch **Objective :** To be used for volunteer in early diagnosis and treatment **Target audience :** To all volunteers **Number of production:** 600 **How to distribute :** To all VMWs
4		**Type of IEC material:** VMW signboard **Objective :** To aware VMW activity in their communities **Key Message :** VMW sign indicating free malaria test and treatment service **Target audience :** Local community members **Number of production:** 1,300 **Where to distribute :** At VMW house
5		**Type of IEC material:** VMW Sport Shirt **Objective :** To identify VMWs **Key Message :** VMWs with USAID logo **Target audience:** Volunteer Malaria Workers **Number of production:** 200 **Where to distribute :** CAP-M Project activities
6		**Type of IEC material:** VMW Cap **Objective :** To identify VMW **Key Message :** VMWs with USAID logo **Target audience** : Both migrant & resident of Local community **Number of production:** 970 **How to distribute :** To all VMWs

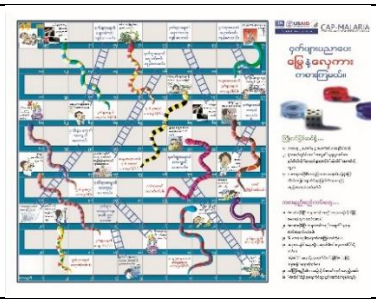
Bus / Boat Channels

No	Product	Description
7		**Type of IEC material:** Bus seat cover **Objective:** BCC targeting migrant and resident **Key Messages:** Be aware of drug resistant malaria, prevent malaria by sleeping under LLIN, blood test within 24 hour, and taking drug completely **Target audience:** mobile/migrant population **Number of production:** 2200 **Where to distribute :** On the high way bus
8		**Type of IEC material:** Bus Poster **Objective:** Changing behavior of community to correct treatment and prevention. **Key Messages:** (i)To aware of drug resistant malaria is present (ii) To take blood test within 24 hour if you suspect malaria (iii) if malaria parasite is present, take full course of drug **Target audience:** mobile/migrant population **Number of production:** 50 **Where to distribute :** At bus station
9		**Type of IEC material:** Bus Ticket (Both sides) **Objective:** Changing behavior of community to correct treatment and prevention. **Key Messages:** (i) blood test within 24 hours of fever onset; (ii) if malaria parasite is present, take full course of drug to avoid drug resistant (iii) prevent malaria by sleeping under LLIN ; (Other side): Describe bus line with itinerary **Target audience:** mobile/migrant population **Number of production:** 4,500 **How to distribute :** Distribute to passengers
10		**Type of IEC material:** Memory stick **Objective:** Changing behavior of community to correct treatment and prevention. **Key Messages:** 4 video shows about malaria for early diagnosis and treatment, sleeping under LLIN, taking full course of drug and **Target audience:** To all local community members **Number of production :** 150 **Where to distribute :** Show on the bus
11		**Type of IEC material:** Vinyl Boat Banner **Objective:** Changing behavior of community to correct treatment and prevention. **Messages :** (i) To know drug resistance malaria is present (ii) Everybody should aware prevention of malaria by sleeping under LLIN **Target audience:** mobile/migrant population **Number of production:** 20 **Where to distribute :** Stick on Boat

12		**Type of IEC material:** Vinyl Boat Banner **Objective:** Changing behavior of community to correct treatment and prevention. **Messages** –(i) blood test within 24 hours of fever onset; (ii) If malaria parasite is positive, to take complete course and dose of treatment **Target audience:** mobile/migrant population **Number of production:** 20 **Where to distribute :** Stick on Boat

School Malaria Kit (2013-2014)

No	Product	Description
13		**Type of IEC material:** School Malaria Kit (Game Card) **Objective:** Changing the behavior of the school children on correct ways of treatment and prevention of malaria. **Key Message:** Messages for prevention, blood tested and treatment of malaria **Target audience:** service providers (school teacher) and school children **Number of production:** 700 sets **Where to distribute :** At participating schools
14		**Type of IEC material:** School Malaria Kit (Comic Book) **Key Message :** A story about "Mosquito (Shwe Sin) and Malaria" describing prevention, control and treatment of malaria among school children **Target audience:** service providers (school teacher) and school children
15		**Type of IEC material:** School Malaria Kit (Sticker) **Key Message:** (i) To sleep under LLIN whenever and wherever you sleep; (ii) Test within 24 hour if you have malaria fever **Target audience:** service providers (school teacher) and school children
16		**Type of IEC material:** School Malaria Kit (Poster) **Key Message:** (i) Prevention method to avoid biting of mosquitos; (ii) Avoid other method such as using mosquito coil and smoke; (iii) Tested within 24 hour when suspect malaria **Target audience:** service providers (school teacher) and school children
17		**Type of IEC material:** School Malaria Kit (Story Book) **Key Message :** A story about secondary school child and his family about malaria experience **Target audience:** service providers (school teacher) and school children

18		**Type of IEC material:** School Malaria Kit (Snake and ladder Game) **Key Message:** Using malaria messages on the snake and ladder game. Up to the ladder when the player get correct information. Snake will swallow if the player get incorrect messages. **Target audience:** service providers (school teacher) and school children